THE BOOK of KNOWLEDGE

CHIEFTAINS OF A VANISHING RACE



The red men of North America, who held sway in the vast countries where now fly the Stars and Stripes and Union Jack, are no longer powerful. They must change their manner of life or they will soon be extinct as the Aztecs of South America. A brave and picturesque race, they have always numbered among their tribes men with noble souls, like the chief described in the story "The Last of the Mohicans," on page 195.

The Book *of* Knowledge

The Children's Encyclopædia

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Dublin Castle, the Official Home of the Irish Government.

THE STORY OF IRELAND

CONTINUED FROM 5542

LIKE the history of all countries, the early history of Ireland is lost in myth. At the first date of which we can speak with certainty, the island was already inhabited by Celts; but tradition tells of ancient people who lived there long before ever the Celts crossed the Channel in little coracles, skin-covered boats such as were in use down to a late date in the Arran Islands on the western coast. Our first real knowledge of the Irish people is gained from the writings of Ptolemy, a Roman historian, in whose time, and for long after, they were known as the Scots. It is thought that even then the country had been divided into something like its present divisions, Ulster, Munster, Leinster and Connaught, under the rule of kings. But each of these divisions was subdivided into smaller kingdoms, which again were divided into clans, or septs. The chiefs and kings were not always succeeded by their eldest sons. During the lifetime of the chief, the people chose from his family the man whom they wished to govern them, and henceforth he was looked upon as the heir, and was called the "tanist." From among the four chief kings a high king, or ardri, was chosen for life, and some time after the period of which we are now speaking, a fifth kingdom, the kingdom of Meath, was carved from the other four and given to the reigning high king as his domain.

The religion of the people was very much like the religion of the Britons. Their priests, like the British priests, were called Druids, and next to the kings they were the most important people in the country. After them in importance came the bards, who sang of the deeds of the kings and chieftains, and carried down their traditions from generation to generation. There were schools for these bards and also for the Brehons or judges. Every third year the high king called a great council at Tara in Meath, and there the Brehons interpreted the laws to the assembled chiefs. Under the Brehon Laws, no man could inherit land, for the land was held to be the common property of the tribe; it did not, as among the Teutonic peoples, belong to the king. Therefore the king could not bestow it upon knights to hold as his men. It is important to remember this fact because it is partly owing to it that no Irish king ever gained enough power to weld the people into a really united nation.

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THE COMING OF ST. PATRICK TO IRELAND

There are many traditions of famous men in these ancient times, to which all Irish men and women like to look back, and one of the most important was Niall of the Nine Hostages, who was high king for years. Niall made many raids into Britain, and among the captives taken on one of these was a youth of about sixteen years old, a native of Dumbarton, or, some say, of Gaul, who became the slave of a chieftain named Melchus. For seven or eight years he herded his master's flock on the mountains of Antrim. Then he escaped and went back to Britain, where he was ordained a priest. From Britain he went to Gaul, and from Gaul, some say, to Italy. But the thought of the island he had learned to love, weighed heavy on his heart, and he turned back, determined to win its pagan inhabitants to belief in the Christian faith.

He tried to land on the coast of Wicklow, but the people there would not have him, so he sailed up the eastern coast and landed on the shores of Strangford Lough. Thus it was that the great St. Patrick came a second time to Ireland, this time not as a slave, but to bring it the blessings of Christianity. Wherever he went, he made converts of chiefs and people, and before he died the whole island was won. Many stories are told of the simplicity and clearness of the teaching of the saint, and the holiness of his life. Every one knows the story of how he taught the great Christian doctrine of the Trinity by plucking a leaf of shamrock and pointing to the three perfect leaves growing from one stem. From that day to this the shamrock has been used as the emblem of Ireland.

Then began the days of Ireland's glory. Great monasteries were founded, schools were established, to which students flocked in hundreds, and learning spread among the people. Music and the goldsmith's art flourished, and some of the most beautiful manuscripts of medieval times were written by monks in hermit cells in the great monasteries. With the love of the gospel they had learned in their hearts, young men went out as missionaries to teach it to the Picts in Scotland and to pagan Angles and Saxons in Britain, to the Gauls in France, to the many Teutonic tribes in the forests of Germany, to the Frisians on the shores of the Baltic, to the Lombards in Northern Italy.

THE LEARNING OF THE IRISH MISSIONARIES

At a time when the dense darkness of ignorance covered Europe, Irishmen were learned. The fame of their learning spread, and crowds of young men from other lands flocked to the monastery schools in Ireland to be taught. Irish missionaries carried the light of religion abroad, and schools and monasteries were founded by them in central and eastern Europe. One of the greatest of these missionaries was St. Columba, who founded the monastery on Iona; another was Aidan, who converted all of northern England; St. Gaul, who gave his name to a town and canton in Switzerland, was still another; and these are only a few of the names that are remembered. But through all this life and learning, the lot of the people at large does not seem to have been happy. The high king, or ardri, was never strong enough to keep peace in the land. The kings of the provinces, and the chiefs of the clans were at constant war with one another, and there was no unity among them.

BRIAN BOROIHME, WHO DESTROYED THE POWER OF THE DANES

The time was coming when unity was sorely needed. At the end of the eighth century the Northmen reached the island, and brought ruin and misery in their train. They first landed at Dublin, where they built a town, which they made their headquarters, and during the next two centuries they established themselves everywhere, along the bays and rivers, that their long black ships could penetrate. They came in numbers great enough to build strong towns and make fortified settlements, and wherever they went they grievously oppressed the people. At length, toward the end of the tenth century, Brian Boroihme, or Boru, or Boruma, king of Munster, determined to put an end to the havoc that they continued to work. To this end he fought against and defeated Malachy, the high king, who had already himself defeated the Danes—the Malachy who "wore the collar of gold that he won from the proud invader." Then Brian made himself high king, and at the head of the largest armies that he could mus-

THE BEAUTIFUL LAKES OF KILLARNEY



This is the middle lake of Killarney, called Tore Lake. The rock in the water is called the Colleen Bawn.



Here we see the upper lake, with the picturesque road that runs by the side of the shining waters



Photograph copyright by H. C. White Co.

There are three lakes at Killarney. The upper lake, shown in this picture, is the most beautiful, though the smallest. The margins, with the hills beyond, have been called "the most magnificent shore in the world.'



From this picture we get an idea of the luxuriant growth of the flowers and other plants at Killarney.



The lakes are joined together, and here we see the meeting of the waters of the middle and lower lakes.

ter, he defeated the Danes again and again until he forced them to pay him tribute and to keep within their seaport towns.

For twelve years Brian seems to have been strong enough to give peace to the harassed land. Then one of the sub-kings of Leinster rose in rebellion and the Danes took advantage of the opportunity, that this fresh warfare gave them, for a last effort to gain supremacy in the island. Calling to their aid their friends from Northumbria, from Anglesea, and the Isle of Man, and from the islands of the Scottish coast and the Orkneys, they gathered a large host and prepared for battle at Dublin. On his side Brian had not been idle. With the men of Munster and Connaught at his back, and with the aid of his old enemy Malachy and the men of Meath, he marched to the fray. The two armies met at Clontarf, outside Dublin, on Good Friday, of the year 1014. The battle raged all day and victory remained with the Irish. But Brian's eldest son, Morrogh, and his grandson Thorlogh fell fighting, and Brian, who had remained in his tent to pray, was slain by the Danes as they fled. The battle put an end to the Danish power, but it also ended any hope of the people becoming a united nation, for no ardri arose who was strong enough to keep peace for a sufficient length of time to accustom the people to a settled rule, and the history of the next hundred and fifty years is a story of constant quarreling between the kings.

How the Norman King Came to Ireland

In the twelfth century, Dermod MacMurrough, king of Leinster, carried off Dvorgilla, the beautiful wife of O'Rourke, prince of Brephni, in Connaught. O'Rourke went for help to his over-king, Roderick O'Connor, who was also ardri, and Dermod was forced to flee from the country. Burning with a wish for vengeance, he sought the aid of Henry II of England. Henry was too busy with his wars in France to take the matter up himself, but with his permission Dermod enlisted the aid of Richard Clare, Earl of Pembroke, known as Strongbow, Maurice Fitzgerald, and a number of other barons. As a reward for his help, Dermod promised that his daughter Eva should be the wife of Strongbow, and that Strongbow should succeed him as king of Leinster. The next year the barons invaded the east and south of the country. Dermod was re-established in his kingdom, and the barons established themselves in the east, along the broad estuaries which run up into the heart of the country, and in the seaport towns. The Irish chiefs made a brave fight against the invaders, but were defeated almost everywhere, and when Henry II, fearing that his barons would become too powerful for him, went over with a large army, most of the chiefs as well as the barons did him homage and promised allegiance to him as their overlord.

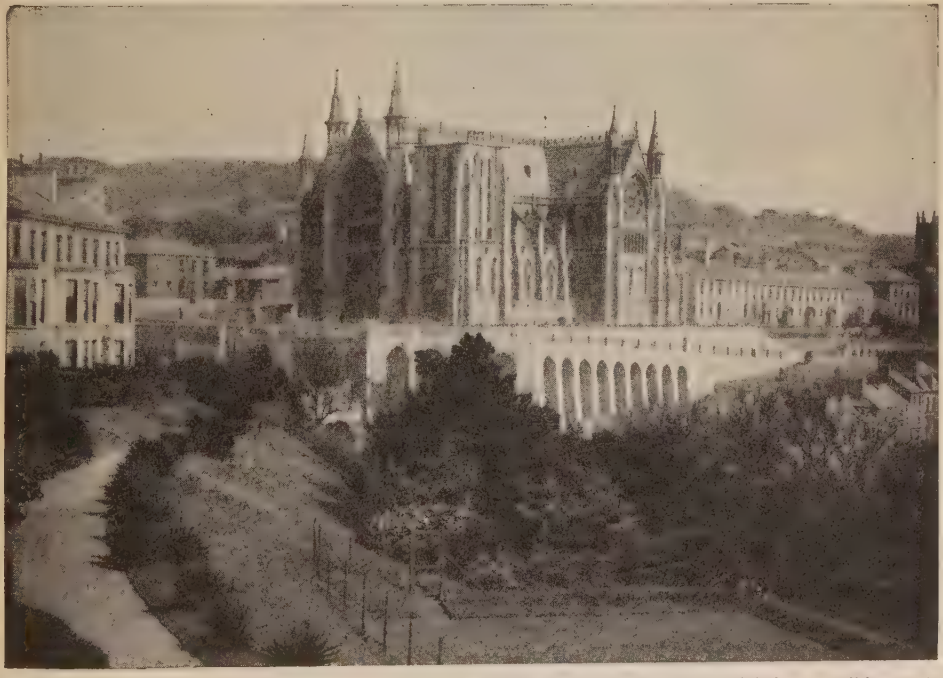
English law went into force in the land that fell under the power of the barons, while in the part of the country that was ruled by the chiefs, the old Irish law of the Brehons was kept. But as time went on, some of the barons, who wished to gain power as Irish chieftains, cast aside the English law and put themselves under the Brehon Laws. This, of course, was treason in the eyes of the king, and to prevent repetitions of the offence, a law called the Statute of Kilkenny was passed in the reign of Edward III, which forbade intermarriage between the two peoples, and declared it unlawful to wear Irish dress in English territory. The law had little effect, however, and gradually a large part of the country which had been English fell back under Irish rule, and many of the people of English descent became more Irish than the Irish. This was the state of affairs at the close of the Wars of the Roses, but now we come to another part of the story.

English Law Enforced by Henry VIII

During the Wars of the Roses, the power of the barons in England was broken. It was otherwise in Ireland. There, although chiefs and barons alike recognized the king of England as overlord, the chiefs really looked upon themselves as independent kings, and the barons had become as powerful as the great French nobles ever were. With the Tudors a change came. Their efforts to reduce the power of the chiefs and barons led to many wars and rebellions, during which the land was made desolate, but it is useless to attempt to tell the story of these ceaseless wars, and their causes. It is enough to say that by the end of the reign of Elizabeth, practically the whole island had been conquered.



In the sixth century, St. Kevin, an Irish hermit, built himself a cell in the Vale of Glendalough, in the county of Wicklow. Students gathered round him, and a monastery grew up which became famous as a place of learning. The seven churches are scattered through the valley, but in an enclosure in the centre of the picture we can see the round tower and the ruins of the cathedral and St. Kevin's church.



This is a picture of the cathedral and part of the pretty town of Queenstown, which is so well known to us as a place of call for trans-Atlantic steamers. The cathedral was begun only about the middle of last century and is still unfinished. Queenstown Harbor is the harbor of the city of Cork, the most important city in the south of Ireland.

Pictures on pages 5555 and 5559 copyright, Underwood & Underwood.

Henry VIII put an end forever to the Brehon Laws, and declared the English law in force throughout the island, and as he was strong enough to exact allegiance from the chiefs, the law was obeyed. He also divided part of the land into counties, and so began to break up the boundaries of the smaller kingdoms.

CROMWELL AND HIS IRONSIDES SWEEP THE LAND

In the reign of James I, a colony of Scottish Presbyterians was brought over, and settled in the northeastern counties of Ulster in place of some of the Irish owners, whose lands were declared forfeited. These were the ancestors of the Ulstermen of whom we hear to-day. James, who was always in need of money, also exacted large sums from landowners as the price of the right to keep their land. His example was followed by Charles I, and this and the tyranny of the Earl of Wentworth brought about a rebellion in 1641, which lasted throughout the Civil War in England. Those who were not in rebellion in the country were in favor of the king, and when Cromwell, after the execution of Charles, had established the new government firmly in England, he crossed over with his Ironsides and began a ruthless war against both royalists and rebels. Thousands were put to the sword, crops were destroyed, castles ruined, houses burned, and when it was all over, numbers were sent to the West Indies to work as bond servants. Many of the estates were confiscated, and most of the people who had owned them were forced beyond the Shannon to live, while the land which was thus made vacant was granted to Cromwell's soldiers and others upon whom he could rely.

After the accession of Charles II, much of this land was returned by what was called the Act of Settlement, but many of the new occupants were left in possession, and this created fresh discontent. Still, all might have gone well, and the country might have made the best of things and settled down in peace, if it had not been for the lack of wisdom shown by James II, who, because of his foolish acts, lost the throne of England, and fled to France. The next year, however, he landed at Kinsale, in the south of Ireland, hoping that, with Ireland as a base, and with the help of an army from France, he might be able to drive William III out of England, and make himself king again. The people of the south and east of Ireland rose in his favor. The people of the north rose against him. The gates of Londonderry were closed against his army, and a new war was begun.



The old Irish Parliament House in Dublin, which is now the Bank of Ireland.

THE WAR BETWEEN JAMES II AND WILLIAM III

Four things stand out in this war,—the siege of Londonderry, which held out against an overwhelming force until at the end of fifteen weeks it was relieved; the battle of the Boyne, where James ran away and William was victorious; the battle of Aughrim, where the Irish army, under a French general named St. Roth, fought with splendid valor against great odds, but was defeated; and the

siege of Limerick, which is just as famous as the siege of Londonderry. To end the war, King William's general in command offered to let the garrison march out, and, if they wished, to sail for France. This was agreed to, and all except about a thousand followed their general, Patrick Sarsfield, into exile. In the years that followed, many thousands of young men followed their example, and during the wars of the eighteenth century the "Wild Geese of Ireland," as the Irish soldiers were called, were famous on nearly every battlefield of Europe.



Dublin, Sackville Street, also called O'Connell Street, showing the O'Connell Monument.

At the time when Henry VII was trying to break the power of the Irish nobles, a lord deputy, named Poynings, whom he sent over, had a law passed by which only laws which had been submitted to the king and the Privy Council of England could be passed by the Irish parliament. At the time this law was passed only a very small part of the country was really affected by it, and it did curb the power of the barons. Later, however, it created injustice, and this was strongly felt as time went on. There were other causes of complaint about the parliament. For instance, the parliament was not elected for a stated number of years, and only came to an end with the life of the sovereign. Still greater injustice arose from what is called the Penal Code, a series of laws enacted in the reign of William III after the war of which we have just been speaking. They were passed under the influence of the fear caused by the invasion of James II with a French army, and by the intolerant laws made by a parliament which had been called by James. Under this Code, Roman Catholics had no political or religious rights, and there were irritating laws about education. There have been misunderstandings between the people of England and Ireland, and mistakes have been made on both sides, but these laws we must remember were made by the Irish parliament.

THE UNION OF THE IRISH PARLIAMENT WITH THE ENGLISH PARLIAMENT

Late in the eighteenth century, chiefly through the work of Henry Flood, a law was passed which provided that parliament should be elected for eight years only. Flood's work was taken up by Henry Grattan, and through his influence an act was passed by the English parliament, in 1782, which repealed the declaration of its right to control

the Irish parliament, and the same year Poynings' Act was repealed. Then Grattan began to work for the repeal of the Penal Code; but beyond the passing of an act in 1793 which gave Roman Catholics the right to vote, he was unsuccessful.

The Irish parliament remained independent for eighteen years, but in 1798 some of the people rose in rebellion. The rebellion was put down, and after it was over, William Pitt, who was then prime minister of England, thought that it would be a good thing if a union of the two parliaments were made. In spite of opposition, his proposal was carried out, and the union was made in the year 1800 by a law passed by the Irish parliament, which enacted that Irish members should sit in the British House of Commons and Irish peers in the House of Lords at Westminster.

At the time of the Union, Pitt promised that the Penal Code should be repealed; but George III would not listen to such a proposal. The question was dropped at that time, but through the work of Daniel O'Connell, all these unjust laws were repealed in 1829. Daniel O'Connell also began to work for repeal of the Union, and the agitation for repeal, which later on got the name of agitation for Home Rule, has continued to this day.

The causes of the famine of 1847

As we have learned in other places in the book, a belief was long held that colonies existed chiefly to supply raw material for the use of the mother country, and that, therefore, the commerce or manufactures of a colony which interfered with the commerce or manufactures of the mother country should be repressed. Of course we know now that such a belief is quite wrong, but at least until the end of the eighteenth century it was honestly held by almost every one. Its grave injustice was seen by only a few until after it had led to the American Revolution. Poynings' Law gave color to the belief that Ireland was a colony. It was thought that her cattle trade and woolen manufacture interfered with English trade and manufactures. Therefore, both were repressed, and except for the linen manufactures in the north there was practically no industry left for the people except the cultivation of the land.

In the middle of the nineteenth century there were over eight million and a quarter people living in Ireland, and nearly eight million of this number were attempting to live on the produce of the land. This was much too great a number for a country the size of Ireland to support, even if every acre were fit for cultivation, and in Ireland there are large tracts of bogs and barren land, and tracts of mountain country. In such a case as this, the failure of even one crop is sure to bring a catastrophe, and such a catastrophe happened in Ireland.

In the year 1847, the potato crop, upon which the poorer people in the country had learned to depend largely for food, was killed by a mysterious, blight. The consequence was a dreadful famine. It was followed by sickness, which the people, weakened by hunger, could not resist, and hundreds of thousands died. This was the beginning of a great emigration to the United States and the British overseas dominions, and within fifty years the population was reduced to about one-half.

About thirty-five years after the famine of 1847, a new leader arose, named Charles Stewart Parnell, under whose guidance disputes about the possession of the land began. To understand their cause, we must go back a little way.

In the sixteenth and seventeenth centuries, large estates which were confiscated in the wars were granted to Englishmen or to Irishmen who were loyal to the king, while large tracts of land remained in possession of the descendants of some of the ancient chieftains, and of the great Anglo-Norman barons. Thus, much of the land belonged to members of a few families. Naturally these large estates could not be cultivated by their owners, so they were rented to tenants. Most of these tenants were very poor, partly because the methods of cultivation were too primitive to make the land productive and partly because the rents were as a general rule too high, especially after cheap grain imported from America reduced the price of grain raised in Ireland.

Some of the reasons for conflict

Life was not easy for people who had large farms, and for the men who had farms of only a few acres it was very



The wall and towers shown here are part of a Norman castle, known as King John's Castle, which was built in the time of King John to hold the bridge across the Shannon at Limerick. The bridge, which is modern, is called Thomond Bridge, in memory of the old kingdom of Thomond, in Munster. The conveyance which you can see crossing the bridge is known as a side car, and is peculiar to Ireland.



Peat, which is much used for fuel by the country people in Ireland, is cut in bricks and piled in loose heaps to dry. Cutting peat is not always such easy work as the picture shows, for there is a great deal of water in many bogs. Trenches are dug to drain them, but the task of getting out the peat is very disagreeable. Machinery is now sometimes used to cut the bricks of peat, and heat is used to dry it.

hard. But there was little by which any money at all could be made except farming. There was a constant struggle to obtain farms, and as long as men could be found who were willing to attempt to pay high rents, few landowners were willing to lower them. When crops failed and prices went down, and farmers were unable to pay their rents, some landlords said farming did not pay, and instead of letting all their land for agriculture, turned the little farms into large fields for pasture. The landlords, of course, thought they had a right to do as they would with the land, because it was theirs, just as they thought they were right to charge as much rent as they could get. On the other hand, there had always been a feeling, which came down from the time of the Brehon Laws, that the land belonged to the people. Small farmers found it hard to get food for their families in bad seasons, and after a time, men who could not pay the high rents to which they had agreed, or whose rents had been raised, began to refuse to pay any rent at all. They were helped in their refusal by a society called the Land League, which was organized about the time that Charles Stewart Parnell became the leader of the majority of the Irish members in the House of Commons. He did not organize the society, but he gave it his support, and its members kept him at the head of the Irish party almost until his death. The Land League obtained a strong hold over Ireland, during the years it was in existence, and had a great deal of influence on the country. Many people thought its influence was all good, many thought it all bad. It is quite true that some of its members used it as a cloak for deeds of which others were ashamed, but it made Irishmen begin to think they had a country to be lived in, not a place to run away from as soon as they were grown up.



An Old Celtic Cross, still standing at Monasterboice, Ireland.

Until Parnell gained the leadership, the majority of the Irish members of Parliament had belonged to one or other of the great political parties. Parnell formed them into an Irish party, to follow his lead on all questions, and this gave the Irish members much more power in Parliament than they had had when they were divided.

THE FARMERS BECOME OWNERS OF THE LAND

Meantime great efforts were being made to do away with the misunderstandings between the English and the Irish people, to help the country toward prosperity, and to end strife. It was thought that because Irishmen had so much love for the land, it would be better if the land belonged to the people who actually worked it, so laws were made by which the government has been given power to lend money to tenants who wish to buy their farms, whether the owner of an estate wishes to sell or not. Many people have taken advantage of these laws, and much of the land is now owned by the men who cultivate it. In addition a commission was appointed to fix rents where the tenants think them unfair.

Of late years, Ireland has become much more prosperous than it had ever been. Co-operative societies have been organized to enable farmers to help one another in buying, and in finding good markets for their produce, more agricultural schools have been established, creameries have been built, and, particularly in the West, schools have been established to teach cottage industries.

In 1914 a Home Rule bill was passed. The province of Ulster objected to Home Rule, however, and threatened to fight if the Act of Union were repealed. Just then the Great War broke out, and in the face of the common danger, the question of Home Rule was postponed. But as the war went on some of the people became impatient. They listened to the speeches of men who told them they were being unjustly treated, and in 1916 a society, called the Sinn Fein, made an attempt at rebellion, which was put down by force. There has been much disorder ever since. It is unfortunate that all the people of Ireland cannot agree on the kind of government they want.

THE NEXT STORY OF COUNTRIES IS ON PAGE 5651.

WHAT THIS STORY TELLS US

NOWHERE are there so many legends and tales of the old days as in the German states. Some story is connected with every stream, forest, mountain or castle, and dozens are told of some particularly romantic spot. Though the events of this story are supposed to happen in what is now Belgium, it belongs with other German tales. It was first told by a German writer seven hundred years ago, and several different versions, differing a little in names and events, have been written since. The great German composer, Richard Wagner, of whom you are told in another place, took the story for his opera of Lohengrin. If you have not heard the whole opera, you have no doubt heard a part of it called the "Wedding March," which is often played at weddings.

LOHENGRIN, OR THE SWAN-KNIGHT

CONTINUED FROM 5482

LONG ago, when Henry the German ruled over nearly all of Europe, and made successful war on those fierce destroyers, the Huns, some strange things happened, of which I shall tell the story.

The Duke of Brabant, one of Henry's vassals, lay on his death-bed in the ducal castle at Antwerp. He was thinking of his children, Godfrey and Elsa, whom he must leave behind, and trying to choose from all his nobles the one he might best trust with their care, and the government of the duchy while they were children. At last he called Frederick, Count of Telramund, and charged him to rear the children in all virtue and nobility, and to guard the land for them till they should be grown and able to rule for themselves.

One day Elsa, who was older than her brother, led him into the forest near the castle. They ran along joyously picking flowers, and shouting to each other over each new-found blossom. "See!" cried Elsa, once when she had found a very lovely one, "Godfrey, see this pretty hyacinth." But her brother did not run to her side with his gay laugh, and when she looked up he was gone. She ran hither and thither, calling and searching, but at last, weary and weeping, she went back to the palace alone, where she was scolded and shut up in prison because she could not tell what had become of him.

It was not long after this that King Henry came to Antwerp to get aid from the people of Brabant in his campaign against the Huns. Frederick called the people together on a meadow, near the River Scheldt, while he, with his wife and the nobles of Brabant, sat high on the bank above the meadow; and Henry with his men sat near him, but on the opposite side of a great oak, whose branches shaded them all.

When the people had become silent, King Henry said: "Frederick, Count of Telramund, before I call thy people to war, tell me, and thou canst, what is this I hear of the disappearance of thy ward, Godfrey of Brabant, and the charges against the Princess Elsa, his sister, and of thy claim to the late duke's crown?"

And Frederick replied; "I thank thee, gracious King, that thou hast come here to judge, and I will gladly tell thee all the truth. Elsa, by her own hand, slew her brother. Because of this I could not marry her, as the late duke had given me the right to do, but instead I married Ortrud, daughter of an ancient line of dukes. Now I claim the crown, both in my own right, as next of kin to the late duke's children, and in the right of Ortrud, my wife, for Godfrey, being dead, cannot inherit, and Elsa has lost the right through her crime."

"A grave charge," said the King; "let the accused be brought forward."

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Elsa was then led before the king. She was fair and lovely, but seemed as if in a trance. At first she could say nothing, but when the king kindly urged her to confide in him, she began in a strange dreamy voice:

"Lonely and sad, I prayed to Heaven. My grief, so dolorous, charged all the air about with deepest pain. Then I fell asleep, and to me in my dreams a knight in glittering armor came and comforted my heart, and he will come again and be my champion to prove my innocence."

Then the king turned sternly to Frederick, and bade him be sure of the truth of his accusation ere he challenge such a vision; but Frederick appealed to the nobles, who raised a great shout, and said not one would doubt his truth.

King Henry drew his sword and thrust it in the ground, saying:

"Speak, Frederick, Count of Telramund, wilt by deadly combat submit thy cause to God?"

Bowing before him, Frederick replied, "I will."

"And thou, Elsa of Brabant," said the king, "wilt choose a champion to do deadly battle for thy sake?"

"Yea, most noble King."

"Whom choosest thou?"

Elsa looked up at the king, and then away into the far distant sky, and spoke as if to some one far, far away, and yet very, very near: "I ask the God-sent warrior to be my champion, and he shall wear my father's crown and take me for his bride."

Then, at the king's command, the herald stood up and shouted: "He who, in God's name, fights for Elsa of Brabant, come forth."

All the court and people listened and looked, but no champion appeared. But as Elsa listened, she seemed to awaken from her sleep. She stepped before the king, and spoke in a clear, steadfast voice, looking straight into his eyes: "My dear King, let the herald call again, I pray thee, for my knight lives far and has not heard the summons."

The herald called again, but still there was no response. Then Elsa knelt and prayed: "Great Heaven, thou didst bear to him my sad lament, thou didst send him to comfort me. Send him now again, I pray, to champion my cause and set me free. Oh, let me see him now as once before."

Then King Henry and those highest on the bank saw afar off a ship approaching. The ship was drawn by a swan, and in its prow a knight, dressed in glittering armor, stood upright, looking toward the shore. "See! see!" shouted the people. "A boat! A swan! The wonderful knight!" Then all sat breathless while the boat drew near, and the knight, alighting, turned and bade his swan farewell:—

"Thank thee, thank thee, dear my friend,
Sail across the deep blue sea,
When thou comest here again
May it be sweet joy to thee.
Be true, dear swan, farewell, farewell."

Then he turned and saluted the king, who asked him wherefore he had come, and he replied: "Most noble King, I come to champion a maiden, who is in great distress because of a false accusation, whereof I will soon cause all the world to know her innocent."

Then he turned to Elsa, and said: "Wilt accept me, Elsa, and then choose me to be thy champion?"

Elsa knelt before him, and called him her hero, her champion, her knight, and said she was wholly his.

"If I am victorious, wilt be my wife, Elsa?"

"Yea."

"But, Elsa, thou must promise never to ask my name, my rank, nor whence I came."

"Never will I ask these questions, believe me."

"Elsa, hast well understood my meaning? Think, never must thou ask nor even think these questions."

"My shield, my angel, my savior, thou who believest in mine innocence, how great would be my sin to doubt thee! Verily, even as thou deliverest me in my need, so shall I truly keep thy command."

"Elsa, I love thee."

Then Elsa raised her face, and he stooped down and kissed her.

After this he turned toward the assembly, raised his hand for silence, and said: "Hear ye, most gracious King, noble Lords and warlike people, to all I proclaim Elsa of Brabant innocent, and to thee, Frederick of Telramund, I say, God's judgment shall soon prove thy charge is false."

His words rang so true that all the

nobles begged Frederick to renounce his charge and yield the victory to the strange knight without battle; but Frederick refused. He believed the truth of his accusation, he said, and would fight for it, and trust to God to establish the right. So King Henry commanded that preparations be made for the combat.

Heralds paced off the ground, and called aloud to announce the cause of the battle and to warn all against interference. Then, at a signal from the king, the fight began; but it did not last long, for Frederick was soon overthrown, and his adversary, standing over him with drawn sword, said: "Through Almighty God thy life is mine, but I will not take it. Go, make thy peace with thy Creator."

Then King Henry and all the nobles and people raised a mighty shout, proclaiming him the champion of truth, and amid great rejoicing he and Elsa were carried into the palace.

Ortrud and Frederick were alone outside. They could hear the sounds of rejoicing, but they might not participate. "Most hateful woman, deceiver!" said Frederick to Ortrud, "through you I am wholly undone and stand dishonored as the champion of falsehood: I, who ever loved the truth!"

"My husband, Frederick, Count of Telramund, why do you speak so to me?"

"Do you ask, deceiver? You! Did you not tell me that with your own eyes you saw Elsa kill her brother? By your lies you led me to love you and marry you. You made me hate her. Oh, and she is pure and you are vile! Viper! I hate you! Leave me!"

Then Ortrud, by sly and artful words and winning ways, made Frederick again believe in her, and distrust Elsa and her knight. She made him believe that it was by magic and not by God's strength that the stranger had beaten him in battle, and she told him that, if the Swan-knight could be made to tell his name, his strength would immediately leave him. They must try to make Elsa break her vow and ask the forbidden questions.

She then waited outside the palace till Elsa appeared on the balcony, when, by piteous words, she won her compassion and admission to the palace, where she tried in vain with subtle words to make the young girl believe that her deliverer was an evil magician.

The next morning, Elsa and her companions marched in stately wedding procession to the cathedral; but just as she was about to enter the door, Ortrud sprang angrily forward and forbade her to go farther. Then, in the hearing of all, she repeated the lies she had told in secret the night before.

While Elsa stood, pale and troubled, doubting what to do, the other procession, with the king and bridegroom, came up.

"Elsa," said her knight, "who is speaking to thee? My love, is she teaching thee to doubt?"

But before Elsa could answer, Ortrud sprang forward, and challenged the king to put the stranger to the test. "Ask him his name," she cried, and then repeated all her charge of sorcery and evil magic. In the meantime, Frederick had found time to whisper to Elsa: "He will leave you in a day unless you break the magic spell by causing him to tell his name, his birth and whence he came. Break the spell and he will abide at thy side for ever more."

The Swan-knight said to Elsa: "Though the King and all his nobles ask me I need not answer, but to thee, if thou doubtest and would ask me these questions, then must I reply. What is thy wish?"

Elsa hung her head a moment, then looked up into her deliverer's eyes and said: "Though all the forces of doubt assail me, love will conquer, and I will keep my vow."

Then the procession marched with stately joy into the cathedral and the marriage ceremony was performed; but when all the festivities were over and Elsa was alone with her husband, the words of Frederick haunted her mind with terrible meaning. Would he leave her? She could not bear the thought. She began to question him, and with every question her terror grew. At last the forbidden questions had slipped the barrier of her lips: "Beloved, what must I call thee? Ah, but tell me thy very name."

"Elsa, ask not that."

"Yea, yea, tell me thy nam hence camest thou? What is thy race, thy rank?"

Then she swooned, and the Swan-

knight laid her gently on the couch, and tended her till the morning, when he caused all the nobles and warriors, and the king with his train to assemble again on the bank of the river, and thither he repaired with Elsa, his wife, and there before them all he answered her questions:

"Lohengrin is my name, I am son of Parzival, who is King of the Holy Grail. I came from Monsalvat, and the Castle of the Grail. Thither I must now return. I came to succor Elsa, whom I love, but no Grail-knight may ever abide where doubt exists, nor where his name is known."

So he kissed Elsa, and was about to step into the boat, which had again come to shore, when Ortrud confessed her crime. She had changed Godfrey into a swan. "Ha, ha!" she shrieked, "'tis he that draws thy boat!"

Then Lohengrin knelt and prayed, and lo, a snow-white dove appeared to draw the boat, the swan sank into the river, and rose again as Godfrey, whom Lohengrin grasped by the hand, saying: "Dear friend, rule well thy land and aid thy king. Be true, dear one; farewell, farewell." Then he departed, but as the boat set off, Elsa's dead body lay on the shore.

They say her spirit sailed away in the ship with her husband, whom she had lost through the wicked advice of Ortrud.

A LITTLE GAME OF THINKING

"HAVE you ever played 'Thoughts'?" asked Uncle Harry.

The children had been bathing most of the morning, and prowling around all the afternoon, and now they were really too tired to do anything but sit still in the shade.

"No," said Phyllis. "Is it a game?"

"Yes," said Uncle Harry, "and a good one. First of all we choose a subject to think about, and then we let our thoughts travel on from that subject for one minute, and then we tell each other where they have led us."

Sid looked puzzled.

"I'll give you an example," said Uncle Harry. "We'll say that the subject chosen to start from is the grasshopper over there. Now take my watch, Sid, and tell me when a minute has passed."

Sid took his uncle's watch and kept his eyes glued to it.

"Time!" he called presently.

"Go ahead, uncle!" said Phil.

"The grasshopper made me think of the grass," said Uncle Harry. "And the grass made me think of lawns. And lawns made me think of tennis. And tennis made me think of the court at home. And home made me think of Boston. And Boston made me think of the office. And the office made me think of the city. And the city made me think of the State House. And the State House made me think of the sun shining on the dome. And that's as far as I got. So, you see, the grasshopper took me a long way from this pleasant spot beside the bay."

"Now let us try," said Phylllis. "You choose the subject, uncle."

Uncle chose the fishing-boat out in the bay, and he took the watch. Phil's eyes were soon gazing, unseeing, across the water, while Sid flung himself on the grass, dug his elbows into the ground, and put his hands over his ears, as though in shutting out sound he were also shutting in thought.

"Time!" said uncle. "We'll begin with Sid." So Sid began.

"The fishing-boat made me think of fishermen," he said. "And fishermen made me think of Old Jack. And Old Jack made me think of smugglers. And smugglers made me think of adventures. And adventures made me think of 'Treasure Island.' And 'Treasure Island' made me think of the Bermudas. And the Bermudas made me think of the lovely flowers that grow there. And the flowers made me think of Mother, because she loves them so. And—and that's about as far as I got."

"Good, Sid! You started from the fishing-boat and reached mother.

"I think you will generally find in 'Thoughts' that, somehow or other, what you are thinking about most of the time will come creeping in when you are playing. That is why Sid, who thinks about Mother so often, found that the fishing-boat led him to her."

"It's a jolly game," said the children.

It *is* a jolly game. Try it and see. The more there are playing, the more interesting it is; it is surprising to notice the different roads different minds take.

STORIES TOLD IN THE MIDDLE AGES

LITTLE TALES FROM A BOOK THAT SHAKESPEARE READ

The most famous story-book of the Middle Ages was a book written in Latin, called the "Gesta Romanorum," which means, "The Exploits of the Romans." The book received this name because many of the stories were told about real or imaginary emperors of Rome. There are about two hundred stories altogether, and most of them are weak in incident and dramatic power; but it was in the "Gesta Romanorum" that Chaucer, Shakespeare, and other famous poets found many of their plots. Here are some of the more interesting stories.

THE SON WHO DID HIS DUTY

A CERTAIN soldier went on a long journey, leaving his wife and son at home. In a distant land the soldier was made a prisoner, and kept in close confinement, but he was able to send a message to his wife and son telling them of his fate, and asking them to do all they possibly could to collect a sum of money to pay for his release.

The wife was so distressed at the sad news, and wept so much, that she became blind; and the son was then in great trouble, for he knew not what to do. He was anxious to fly to his father's help, but at the same time he could not bear the thought of leaving his blind mother alone while he was away.

After thinking over the matter for some time, he at last determined to go to release his father; but first of all he made careful arrangements for his mother to live among friends, and be properly cared for during his absence. Then he traveled to his imprisoned father, obtained his release, and the family were once again united and happy, and the mother gradually recovered her sight.

THE DOGS THAT BECAME FRIENDS

THERE was a king who had two greyhounds, and these were kept chained up at some distance from one another. But directly they were let loose they flew at each other, and began to fight most fiercely. The king consulted one of his wise men as to what could be done to make the dogs live together as friends.

"Take them into the forest," said the wise man, "and when you see a fierce wolf or a wild boar, let one of the dogs loose. The wild animal will attack it. But just as it is being overcome, let loose the other dog, which will fly at the boar or wolf, and the two dogs together will be more than a match for the wild animal." The king did this. A wolf appeared, and one dog was let loose. When its strength had nearly failed, the other was let loose, and the fierce wolf was slain. The first dog was so grateful to its companion for saving its life that ever after the two animals were faithful friends.

ALEXANDER AND THE PIRATE

A SEAMAN named Diomedes for a long time sailed the seas in a galley, attacking shipping, plundering cargoes, and sinking vessels. At last he was captured and brought before Alexander the Great, who asked angrily how he, a nameless adventurer, dared to trouble the seas as he had done.

"Sire," said he, "ask rather how you dare to trouble the earth. I am master of only a single galley, and do but little harm, while you are master of great fleets, and carry desolation and war. Yet I am called a robber, and you are a king and conqueror. Did fortune but change, and I became more successful while you became less successful, our positions might be reversed."

This argument so struck the king that he made the pirate a wealthy prince, on condition that he should give up his life of robbery and become an honest man.

THE CONQUEROR'S TRIUMPH

A CERTAIN king, after a great victory, appointed three honors for his successful general. He decreed that the victor should be greeted with loud cheers, that he should enter the capital in a triumphal car drawn by four white horses, and that the captives should follow the conqueror's chariot, bound hand and foot.

The general was delighted, but when the time came for the honors to be enjoyed, he found that the emperor in order to keep him humble amid success, had appointed also three annoyances which would accompany the honors.

First of all, a slave rode by his side in the triumphal chariot, to remind him that even the poorest and least of mankind could attain to a position such as his; in the second place, the slave struck him a blow whenever the people cheered, so that his pride might be checked; and, in the third place, the

people were allowed free license to shout the most insulting remarks while the victor enjoyed his triumph, so that he might be reminded of his weak points.

THE GUESTS AT THE FEAST

A GREAT king made a feast, and invited everyone to it. He sent out messengers to all the cities and towns in his kingdom, asking the people to come, and promising both food and wealth.

In one town there was a strong, robust man, who, unfortunately, was blind; and he loudly bemoaned the fact that his affliction would prevent him from accepting the king's invitation. But presently he heard that in the same town was a lame man, who was also grieving that he would be unable to go to the feast.

The blind man and the lame man, therefore, came to an arrangement by which the blind man would carry the lame man to the feast, the lame man directing him. So the man who had sight but could not walk guided the man who could walk but could not see, and the two went together to the king's feast.

HOWLEGLASS, THE MERRY JESTER

The "History of Howleglass" is a famous German book of stories which was written in the early 16th century, and was very popular in England in the reign of Queen Elizabeth. Howleglass is a wily peasant who travels about a great deal, and wherever he goes he plays pranks that make people very angry at first, but afterwards cause them amusement. The following are some of his adventures:

THE DINNER AT THE CASTLE

HOWLEGLASS at one time enlisted in the service of the Count of Ambal, whose castle was surrounded by enemies. Howleglass was placed in the watch-tower, and told to keep a sharp look-out and to blow a horn if he saw the enemy approaching.

Shortly afterwards he heard the count and his chief officers go into the great hall to dinner, and the smell of the dishes was too much for Howleglass. So he gave a great blast on his horn, and while the count and all his men ran off in great alarm to their posts to withstand the enemy, Howleglass rushed down and ate his fill of the victuals provided.

THE THREE GREAT QUESTIONS

ARRIVING at Prague, Howleglass posted a notice on the doors of the churches that he would answer any questions that might be asked of him, however difficult they might be. He was taken to the university and questioned by the rector before all the students, who had gathered to hear the visitor.

"How much water is there in the sea?" asked the rector.

"Stop the tides," said Howleglass, "and I will measure it for you."

The rector said he was unable to do that, and asked a second question.

"How many days have passed away since Adam was alive?" said he.

"Seven," answered Howleglass without hesitation, "for when seven have passed, seven begin again, and so it goes on to the end of time."

"Where is the centre of the world?" asked the rector.

"Why, this house, to be sure," replied Howleglass. "Measure the world with a long cord and you will find I am right to an inch."

"How far is it from earth to heaven?" said the rector.

"Very near indeed," answered Howleglass, "for when we pray ever so low on earth, it is surely heard in heaven."

"But how large is heaven?" questioned the rector.

"Just twenty thousand leagues," replied Howleglass; "and if you doubt me, go and measure it, including the sun and moon and stars."

At this point the rector had to own that he could ask no question to which Howleglass had not an excellent answer.

THE WONDERFUL HORSE

HOWLEGLASS, on his travels, once came to the city of Halberstadt, and lodged at the best inn he could find. Soon his money was exhausted, and in order to get more he asked the town-crier to advertise a wonderful show that would be open to the people on the following day.

"Come," he said, "and see the strangest horse that ever lived. Its tail is where its head should be."

The people flocked to see this strange animal, but on entering the stable where it was kept they found an ordinary horse with its tail tied fast to the manger.

The folk could not help laughing at the way they had been hoaxed, and Howleglass made them promise as they left that they would not reveal the secret to those who had yet to come in.

STORIES TOLD IN THE OLD ENGLISH SCHOOLS

One of the first books on education ever written and printed in English was Sir Thomas Elyot's "Governour," published in 1531. It is a remarkable book, for its enlightened views are worthy of the twentieth century; and much that is done in the education of children to-day was first suggested by its author. The book is full of interesting stories which used to be told in old English schools to illustrate lessons. Some of these stories are given here.

THE MASTER AND HIS SCHOLARS

WHEN Dionysius, King of Sicily, was exiled by his people, he went to Italy and set up a school for boys, to whom he taught grammar and other subjects. His enemies laughed at him for this, declaring that it was quite beneath the dignity of one who had occupied a throne to keep a school. But he replied that, though he had been turned out of Sicily, he was still a king, for he had authority over his scholars.

His enemies then asked him what good Plato's philosophy was to him in his trouble, for he had studied it deeply.

"Ah," replied he, "it enables me to bear misfortune with patience!"

So moved were his former subjects by his fortitude that they recalled him to the throne—a dignity which he would probably never have regained by the sword.

THE TWO FRIENDS

ORESTES and Pilades were two youths who were remarkably alike in appearance, and remarkably fond of each other. One day Orestes was seized by command of a tyrant, who hated him deeply, and who had determined to put him to death. But Pilades accompanied his friend into the presence of the tyrant, and, in order to save the life of Orestes, loudly declared that he was the man the tyrant sought.

The real Orestes, however, maintained that he was the man who was wanted, and so perplexed was the tyrant that he knew not which of the two to condemn. At last, when the youths continued striving to receive condemnation in order that each might save the other, the tyrant's heart was softened, and he set them free.

THE CONQUEROR AND THE ARTIST

ALEXANDER THE GREAT, who conquered nearly all the world, one day went into the studio of an artist, and, while watching the man paint, spoke of drawing, and color, and other subjects about which he knew little or nothing.

At last the artist turned round, with a smile, and said to the king:

"Do you see, noble prince, how even the boy who is mixing my colors is laughing at you?"

Instead of getting angry the king accepted the rebuke, and ceased to talk glibly about what he did not understand.

THE TRAITOR WHO BECAME LOYAL

IT was once reported to King Philip, father of Alexander the Great, that a certain captain had been plotting against him, and the king was urged to have the man imprisoned. But Philip declined, in spite of the continued warnings of his courtiers and friends.

"If any part of my body was sick," said he, "should I cut it off and cast it away? Should I not rather do all I possibly could to heal it?"

He thereupon invited the traitorous captain to the palace, loaded him with gifts and honors, and in this way made him ashamed of his treason. The captain afterwards became one of the most loyal and most loving subjects of the king.

THE KING WHO WAS LOVED

CRŒSUS, the rich king, was captured by Cyrus, King of Persia, and one day, after seeing the liberality of Cyrus, he said:

"Surely if you give away like this you must become very poor, whereas if you keep your wealth you would soon have great riches."

"How much do you suppose I should have now," asked Cyrus, "if, during all my reign, I had kept everything and given nothing?"

Crœsus named an immense sum.

"Well," said Cyrus, "I will send round to my friends and subjects, and tell them that I need money for some object, and you shall see the result."

After the messengers of Cyrus had been round, the king took Crœsus to see the gifts they had sent. Crœsus was amazed, for there stood a great heap of gold, of far greater value than the sum he had named as being what Cyrus might have saved had he been a miser.

"If I had hoarded and guarded my wealth," said Cyrus, "I should be envied and hated by my people; whereas I am loved and trusted by my people, and can in a moment have more gold than ever I could have saved in many years."

THE SOLDIER AND HIS JUDGE

ONCE when King Philip, father of Alexander the Great, was trying a prisoner, he fell asleep; and then, waking suddenly, he at once gave judgment against him. But the soldier cried out:

"King Philip, I appeal against your sentence!"

"To whom do you appeal?" said the king angrily.

"I appeal from Philip asleep to Philip awake," answered the soldier, facing his judge nobly.

The king was impressed by this reply, and, feeling the justice of the man's appeal, he went thoroughly into the case, found that he had greatly wronged the soldier, and at once had him set free.

THE BATTLE WITH THE LION

AT one time, when there was no battle in progress, Alexander the Great became tired of inactivity, and, ordering a fierce lion to be brought into his presence, he fought it single-handed, and after a terrible struggle, finally slew it.

A courtier, who disapproved of the king risking his life thus needlessly, being asked his opinion of the battle, replied in these words of great wisdom:

"I wish with all my soul that your Majesty might fight with a lion for some great empire!"

By this answer the courtier, while praising the king's bravery, at the same time hinted that only for a great cause, and not for mere pride of victory, should he thus risk his precious life, which was of such importance to his people.

HOW ALEXANDER CROSSED THE RIVER

WHEN Alexander the Great was going to war against the Indian King Porus, he and his army had to cross a wide river. The horsemen went in, and the animals were soon up to their necks, so that it was impossible for the foot-soldiers to cross the river by a ford.

The men could not swim, and were afraid to go into the water. Seeing this, Alexander, who himself could not swim, wrung his hands, exclaiming:

"Oh, most unhappy that I am, never to have learned to swim!"

Then, seizing a shield from a soldier and throwing it into the river, he stepped upon it, and, balancing himself with his spear, crossed to the other side, using the shield as a raft. This encouraged the foot-soldiers, and in one way and another they all managed to cross the river.

THE FARMER AND HIS DOG

A POOR farmer by the banks of the Nile had a good dog, which had to go hungry for some days because the farmer had no food in the house. There was a village across the river, where any dog that knew how to forage could manage to pick up a living. The farmer's dog was well acquainted with the place, as he had often gone there with his master in a boat. But swimming across the great stretch of water was dangerous, and the river was full of fierce crocodiles.

Being pressed by hunger, however, the dog finally risked it. He arrived at the village, but on the way he had two such narrow escapes that, for some time, he was afraid to swim back. Meanwhile, he found as much food as he wanted, and grew plump and fairly happy.

But being of an affectionate nature, the dog was troubled by his separation from his master, and his sadness made him as miserable as hunger had made him before. At last he resolved to return. But how could he get back safely? Sometimes a boat crossed the river, and he would then try to get into it. But the boatmen would not have that, and one day the dog stood howling by the riverside at a departing boat, when the crocodiles, attracted by his cries, came swimming to the spot, thinking no doubt, that they could easily take him.

This seems to have suggested to the dog a clever plan of escape. As night began to fall he again came to the riverside, and stood howling with such a show of anguish that the crocodiles crowded once more to the spot, hoping to find an easy prey. But while they were peering about, the dog was tearing along the bushes by the bank.

Two hundred yards away he silently slipped into the river, and, having now a clear way before him, safe from the crocodiles, he swiftly swam back to his master's house. There he received a loving welcome and a good supper, for the farmer had now reaped and sold his corn, and he was very glad to find that his dog had not forgotten him.

THE NEXT STORIES ARE ON PAGE 5681.

THE ADVENTURES OF REYNARD THE FOX

Nobody knows who wrote "The Adventures of Reynard the Fox." They are about a thousand years old, and are found among the ancient literature of many countries. Reynard is an artful knave, who deserves to be punished for all his evil deeds, but somehow manages to escape every time. The stories were written as parables—that is to say, as stories with an inner meaning—and they were meant to point out the evils of rulers and priests in the days when men did not dare to write openly of such things.

REYNARD IS SUMMONED TO COURT

SIR TIBERT the Cat was sent by King Lion to summon Reynard the Fox to appear at court, there to answer for all his offences. At first the



REYNARD SHOWED SIR TIBERT THE HOLE

cat did not want to go for fear that some evil should overtake him, but at last he was persuaded, and he set out.

When he arrived at Reynard's castle, the fox promised to return with him to the court. "But," said the fox, "you must remain for the night, and to-morrow we will travel together." Sir Tibert agreed to this. Then the fox began to lay the table for a meal, but all he could provide was honey.

"That is food I care nothing about," said the cat. "Have you not a mouse?"

"Oh," replied Reynard, "come with me to the priest's barn, it is full of mice!"

So the two set out, and presently they came to the barn.

"There is the entrance," said the fox, pointing to the hole by which he had himself entered the night before and stolen a good fat hen.

Now, the priest had set a trap near the hole, inside the barn, and when Sir Tibert crept in he was caught in the trap. His mewing soon brought out the priest, who, supposing him to be Reynard, began striking out with a stick. Thereupon Sir Tibert seized the priest's leg with his teeth. This gave the worthy man something to think about, and while he and his wife were attending to the wound, Sir Tibert bit through the cord that held him and made off. All this time Reynard was hiding in the bushes close by, and laughing most heartily.

REYNARD TELLS OF A TREASURE

WHEN at last Reynard the Fox was brought to the court, so many witnesses appeared against him that he was sentenced to death. Just before his execution, he asked that he might make a confession of all his misdeeds, for he now felt very penitent; and in the course of this confession he said something that made the king listen very carefully.

"My lord the king," he declared, "in Flanders there is a dense wood by a river, and in it I have hidden a great treasure—money, jewels, precious stones—and I want you to get this treasure; then perhaps you will remember your devoted servant, Reynard."

The animals who had accused the fox now began to feel very nervous, for King Lion, having learned exactly where the treasure was supposed to be hidden, forgave the fox and made him a noble.

"Hear, all you knights and gentlemen," said the king. "Sir Reynard is now one of the chief officers of my court, and I do charge you, upon pain of death, to show him the greatest reverence at all times and in all places." Reynard



"WHERE IS KAYWARD?" ASKED BELLIN

then asked permission to make a pilgrimage to Rome, and he set out, accompanied by his enemies, the hare and the ram, who were now his humble, though unwilling, attendants.

Soon the party arrived at Reynard's house, and the fox asked Bellin the Ram to keep guard outside, while Kayward the Hare went into the house to see Reynard's meeting with his family.

Once inside, it was not long before the hare was killed and eaten.

Then the fox came out, and giving a bag to the ram, asked him to take it to the king.

"Where is Kayward?" asked Bellin. "Oh, he is talking with his aunt, and wants you to go on, as he will soon overtake you."

The ram carried the bag to the king.

"Sire," said he, "this is a present from Sir Reynard, who rested for a few hours at his castle before going on to Rome."

"Open the bag," said the king, "and show the gift of the noble Sir Reynard."

The bag was opened, and out fell the head of poor Kayward the Hare.

"Alas!" said the king, "unhappy monarch that I am ever to have given credit to a sly and traitorous fox."

REYNARD AGAIN ESCAPES

THE day after Bellin the Ram had brought the head of Kayward the Hare to the king from Reynard, Laprel the Coney came into court crying:

"O king! deliver your subjects from the wicked attacks of Reynard the Fox. I was passing his castle yesterday, and he came out telling his beads so devoutly that, instead of hastening away, I saluted him very humbly, and immediately he gave me such a terrible blow with his paw that I was nearly killed."



THE ROOK BENT TO SEE IF HE WAS BREATHING

At this moment in came Corbant the Rook in a great state of excitement.

"Oh, my lord, hear me!" he cried. "I was on the common this morning, when I saw Reynard the Fox lying apparently dead and stiff on his back. My wife went and put her head to his mouth to see whether he was breathing, when suddenly the wicked creature snapped at her and bit her head right off. Then he made a dash for me, and I only just managed to escape by mounting into the air, and from my place above I saw him eat up my dearly beloved wife."

The king was furious. Reynard was brought before him and sentenced to death once more, but again escaped by talking of the hidden treasure and by promising to go in search of it himself for the king.

REYNARD'S BATTLE WITH THE WOLF

AFTER King Lion had pardoned Reynard for the second time, Isengrim the Wolf made all kinds of accusations against him, and it was decided that the two animals should fight a duel to decide which of them was in the right.

The fox knew that it was only by trickery he could win, and he sought



REYNARD SMOTE THE WOLF WITH HIS TAIL

the aid of a friend of his, the ape's wife.

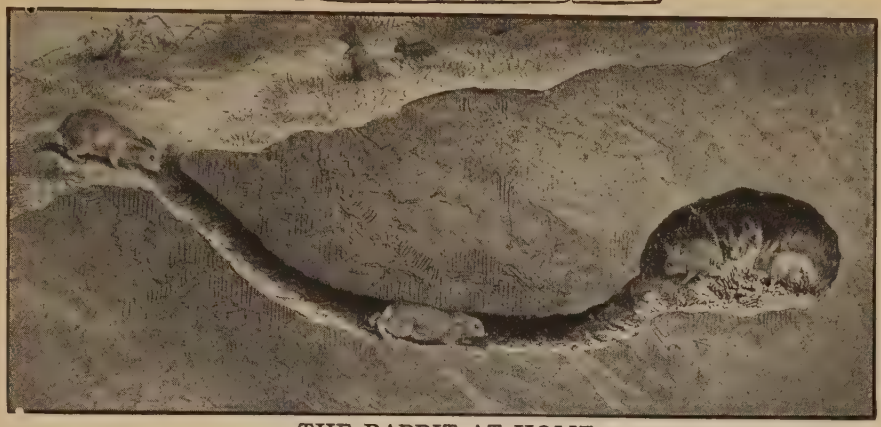
"Shave all the hair off your body, from head to tail," said she, "and cover yourself with oil."

This Sir Reynard did, and then in the presence of the king the fight began.

Every time that Isengrim tried to seize Reynard, the fox slipped away, as his oily body was too slippery for the wolf to get a grip. Then the fox would smite his enemy in the face with his tail, and before he had recovered from the blow he would throw up in his eyes clouds of dust. This nearly blinded the wolf, and gave the fox an opportunity to chastise him. So the fight went on, until the wolf got the fox down and had one of Reynard's paws in his mouth.

Reynard was now in sore straits, but with the other paw he pinched the wolf, and when Isengrim opened his mouth to howl, Reynard snatched out his paw. Then the wolf fainted, and Reynard, laughing triumphantly, dragged him round the arena by his hind legs.

The king now pardoned the fox for everything he had ever done, and made him Lord Chancellor of his kingdom, ordering that all the other creatures should pay him the greatest honor.



THE RABBIT AT HOME

HOMES NOT MADE WITH HANDS

STRANGE DWELLING-PLACES OF ANIMALS

CONTINUED FROM 5512

SUPPOSING that all living creatures were gifted with the power of speech, what song might we expect them to sing? If we can fancy such an impossible thing happening at all, may we not imagine that they would sing, as their favorite song, that song which is the favorite of every son and daughter of our own country, "Home Sweet Home"? To many species of animals, their homes are very dear, and they will endure the greatest hardships to defend them.

We all know how domesticated animals love their homes. The horse, the dog, and the cat would sing the song with all their might. A horse never forgets the place which has once been its home. One intelligent pony, revisiting a town in which it had not been for eight years, made a dash for its old stable the moment it saw the house at which its master had formerly lived.

A dog will travel hundreds of miles on foot to return to the spot to which the kindness of human beings has accustomed it. A cat so dearly loves its home that it will even remain behind in an empty house when the family goes. And think what wonders of flight the homing pigeon performs in order to return to the loft in which some kind boy or girl has made it a home. What, however, of the animals that we have not tamed? They have just as warm an affection for their homes, the dwellings which they have made for themselves and for their little ones. There is a good old English expression, "house-proud." A woman who is fond of her home, and likes to see it pretty and comfortable for everybody in it, is house-proud. Well, many of the animals are house-proud, too, and devote great labor and skill to the making of the places in which they live and rear their babies.

Seeing that the apes and monkeys rank next in the scale of life to man, we might expect them to show skill next to man's in the making of their homes. But they do not. The larger apes are content with a simple lodging in the trees of the great forest in which they live; and none of the monkeys ever makes any pretence at building a dwelling for itself. Are we to be disappointed at this? Not at all. As we all know, man himself, before he became civilized, was content with the rudest dwelling. A rough cave served, until wolves or hyenas came to quarrel over his bones. Man of the very early ages, though he was far superior

in intellect to the highest of the animals, never had any home half so snug as that of the mole or beaver. Therefore, let us



THE INSIDE OF A MOLE-HILL

not think slightingly of the apes and the monkeys because they do not build elaborate dwellings for themselves.

The fact is that for the wonders of Nature's architects we have to go to the smaller birds and animals, and to the insects. These are the little workers which make us realize how very humbly we ought to view the works of men.

THE WONDERFUL HOME OF THE LITTLE BROWN MOLE

Men with their wonderful brains have invented tools for every sort of work, but for all the wonders performed in the animal world there is not a single tool. We need not step beyond our own garden to see the ants at work; we have only to walk to the nearest meadow to find signs of the labor of the mole, even if the busy and impudent



YOUNG MOLES IN THEIR NESTS

little gentleman does not actually venture upon our private property. Quite a little city under the ground is burrowed by the mole. The mole-hills with which we are familiar are not part of the dwelling at all, so we need not dig down expecting to find Mr. and Mrs. Mole and family at the bottom of one. The mole-hills are merely shafts which the mole has thrown up in order to get rid of the loose soil which he has scraped away in making one of his tunnels. The actual home is not so easily found. It is hidden, as a rule, under a tree or large shrub, or in a bank. If we can get a peep inside that, then the mystery of the mole's dwelling is at once made plain.

The main hall of the dwelling is a lofty, sphere-shaped apartment. Around the hall run two galleries, one level with the ceiling, the other higher still. The only way into the great hall is from the upper gallery, from which three passages lead through the ceiling; but there are five short passages connecting the upper



YOUNG FOXES PEEPING OUT OF THEIR HOME

gallery with the lower. Tunnels run in all directions from the home of the mole, but each one comes out into the lower gallery surrounding the hall, so that the mole, on arriving, must enter the lower gallery, run upstairs, as it were, to the upper gallery, then pop through one of the passages which lead into the hall.

This, however, is not the only part of the dwelling of the mole; there is a little house for the children. This is a rather large well-lined and padded chamber, made where two of the underground main roads or tunnels cross. We can see the reason for this; it affords the mother and her little ones ample chance of escape should danger threaten. The explanation of all the other passages round about the main hall is not so clear. We all understand that the height of the

hall is to give proper ventilation, for even under the ground the mole must have air. For the rest, it is not easy to see why such elaborate defences should be required. Ferrets and weasels are not likely to go along a mole's run, and there can be no other underground enemies, unless it be other moles. That idea suggests an explanation. Moles, when they are in love, are so terribly savage —male against male, of course—that, unless some such scheme of defence as we have been studying were made to keep out rivals, father and mother moles would never be able to bring up their families in peace. For, like male shrews, the moles fight until one is killed; and very often the victor is so badly injured in the battle that he, too, must die.

WHERE THE SHREW BUILDS HIS NEST

The shrew, tiny fellow that he is, is a great burrower, but not to be compared



THREE VERY YOUNG HARES IN THEIR NEST

with the mole. The shrew's abode is a simple nest placed at the end of a straight, long tunnel constructed just below the surface. This can be reached easily by any other shrew, but woe betide the intruder; he will certainly be killed if he be a shrew, unless he kill the shrew already in possession. There are connecting links between the shrews and the moles, and we find characteristics common to several different species of these animals.

There is a burrowing shrew in India, whose habits closely resemble those of our common moles. There is the desman, which is abundant in the wilds of the Russian Empire, and which once lived in England—an animal whose habits resemble those of our pretty little water shrews. But whereas our furry little creature is content with a mere hole in the bank for his home, the desman makes himself a noble hall at the end of the burrow which leads from his stream.



A HEDGEHOG FAMILY AT HOME

He passes the greater part of his time in the water, but when he comes out to take a nap in his home, his fur is as dry as the feathers of a duck. The fur of these swimming animals never really becomes wet; air collects about each separate hair, and the animal swims in what is practically an envelope of air.

THE KING AMONG FOUR-FOOTED BUILDERS

Of course, the king of workmen among the animals whose life is divided between the water and the land is the beaver. He must have water in which to swim; he must have a snug, dry home for the night. He comes to a stream which, while of sufficient depth at the time, may in dry weather become too low. So he sets to work, and with his powerful teeth gnaws at the trunks of trees until the



A NEST OF YOUNG SHREW MICE

latter fall, then cuts them up into logs; and with these, and with mud and stones and twigs and all manner of vegetation,

builds a sort of wall or dam, as we call it across the stream. This causes the water to collect at this spot until there is a sufficient depth to flow over the top of the dam. There will always be water there, unless the stream above the dam actually runs dry. The beaver may now make his home, satisfied that there will be at his door the constant stream which he needs. The house which the beaver builds is a masterpiece of skill. It is built of mud, into which are forced branches of trees, and the whole is beaten so solid that, when the frosts of winter come the lodge, as it is called, is as hard as iron.

The dwelling is about seven feet in diameter, and three feet high. Inside, all is snug and warm, the beds being arranged round the walls, so that father and mother beaver and the family can all be accommodated until the time comes for the little ones to go out into the world to make homes for themselves. Two passages lead from the lodge into the water. One of these is fairly high up, but opens out below the level of the water. The other opens out at a lower point, so that, should the water be frozen at the surface, the beaver can get out by the lower one to reach the store of bark which it has hidden to be its food supply in winter.

The labors of the beaver are really of an almost unbelievable character, so extensive, so thorough, and so wonderful in design and execution are they; but we must not exhaust our admiration here, for there is another little creature, the web-footed mole, who, though he is web-footed, is not a swimmer, but a landsman all his days, and a miner above all else. This mole makes a home underground which some of the friends of "Alice in Wonderland" might envy. The marvel of it is, however, the pace at which this creature works. A reliable observer tells us that he has seen a passage nearly a hundred yards in length made by one of these moles in a single night when the soil has been rendered soft by rain. Now, what does that amount of work mean to a mole? It means this: that if a man were to perform a task equal in proportion to his size he would have to bore in one night a tunnel, big enough to admit his body thirty-seven miles long! Let us remember that, when we think that as human beings we do wonderful works.

THE POOR HABITATION OF THE KINGLY OTTER

With the beaver in mind, we might expect the otter, a king of the water and a fairly nimble animal on land, to be clever enough to make himself a nice hole in the banks of the rivers which he frequents. But he is like the early men —content with ready-made refuges, and these are in or near the river-bank. These he may scrape and shape according to his liking, but it is not known that the otter ever sets out and makes a home for himself where there is not some natural retreat already in existence.

The weasels are specially shaped for making their way in narrow, twisting passages underground, but they do not trouble to make homes of this character; they seek shelter above ground. The weasels must be content to share the reflected glory springing from the feats of the big man of their family, the badger. The European badger, especially, is a miner of rare ability, scooping out long, winding passages leading to his underground hall, his nursery, and other apartments, which are fashioned upon the most approved plan with regard to ventilation. This is secured by his making seven or eight passages, opening thirty paces apart. Each of these passages leaves open a way of escape in case of attack upon the fortress, but each also carries sweet air to the home.

THE HOME OF THE WILY FOX

Men who know the European fox only as an animal which they hunt would scarcely think of looking for their prey in the hole of a badger, but Master Reynard is sometimes found there. It is not because the fox cannot dig a home for himself that he has to seek the shelter of the badger's home. He is cunning enough to turn the badger out of his home, and make the place his own. He enters the badger's house, and the big weasel, knowing that he has nothing to fear, permits the intrusion. But while the badger is a very cleanly animal, the fox is not; at any rate, he is not when he takes up his home under the roof of his friend, the badger. So the badger, unable to tolerate the vexatious presence of the uncleanly fox, goes off and makes a new home, leaving the fox in possession.

The badger's is not the only home which the fox takes, as the poor rabbit

THE LITTLE DOGS THAT BUILD A TOWN



The pretty little prairie marmot is called the prairie dog because of its yelping, that sounds like the bark of a dog. It is found in colonies, and burrows tunnels in the ground. Thousands of these homes, which are deep down, are burrowed close together, so that the ground is rendered unsafe for horses. Over the burrows are mounds of earth, and the ground above a colony of prairie dogs resembles a town of miniature huts.

knows to his cost. The European wild rabbit is a splendid excavator. He sinks a steep, sloping shaft into the ground, then, having gone some distance down and forward, burrows in an upward direction, and at the top of this rising shaft makes a big chamber for himself, wife, and family. Sometimes a fox, following a rabbit home, digs his way into the burrow, eats up the poor little rabbit, then, finding the burrow warm and nice, settles there himself.

WHERE B'RER RABBIT MAKES HIS DWELLING

The simple shaft of the rabbit of which we have been thinking is not all that this animal makes. They often conceal the entrances to their homes and excavate a tunnel, pierced by scores of little openings. Behind this screen are the openings to the rabbits' castles in the soil. At any alarm, the rabbits bolt to the tunnel, enter by one of the little doorways, then turn to right or left, and gain their homes without the whereabouts of their retreat being discovered.

The fox we have been discussing is the English red fox, but the United States has a grey fox, which makes a snug home in the stump of an old tree. The Arctic fox is more industrious, as it needs to be, in the fearful cold of the winter which it has to endure. To make the best of matters, Arctic foxes collect in colonies of from thirty to forty, and dig deep burrows in the earth, all the burrows being close together, and in these they defy the cold. But each fox has his own suite of apartments. He digs a main tunnel, with a set of rooms and a number of passages at the bottom, and no fox penetrates the estate of his neighbor.

HOW THE MARMOT KEEPS HIS FAMILY WARM

Smaller animals work quite as hard as the Arctic fox. The marmot is a little giant of industry, and makes two homes every year. He goes up the Alps in the summer, and there makes his summer dwelling, which serves for nightly shelter and also for a refuge in time of bad weather. When the early snows of winter come, down the mountains troop the marmots, bringing their little ones with them. When they reach the quarters in which they are to pass the winter, they work in parties of from fifteen to twenty, digging a long tunnel in the earth, and at the end of that a lofty, circular room. They carry in a large



THE STRANGE LITTLE DUCKBILL PLATYPUS IN ITS UNDERGROUND HOME

quantity of grass for bedding, blocking the entrance to the home, then go snugly off to sleep for the winter. Other species of marmots are content with one residence for winter and summer.

The biggest marmot colonies are those in which the prairie marmots, or prairie dogs, as they are sometimes called, reside. Their cleverly-made homes are so numerous that they often cover as much as 200 acres of ground. They make excellent tunnels and chambers, and the earth that they excavate remains at the entrance; or, rather, we should say that a dozen entrances to as many burrows are grouped round these mounds, upon which sentinels watching for an enemy take their stand, and sound a sharp "tweet, tweet!" at the first sign of alarm, sending the whole colony racing down their tunnels.

THE SQUIRREL MAKES HIS HOME IN A TREE

In our own woods we may find a splendid little builder in our own pretty squirrel. He does not go underground, but makes a nest which a bird might envy, either in a hollow of some tree-trunk, or in a fork of the branches, high up out of danger's way. First he makes a strong flooring and sides, and roofs these over with a little dome, all being of twigs, so closely woven that the rain and wind, which he hates, cannot enter. The inside he lines with the softest moss, and the little home is as snug as one could imagine. But he must have air, so he leaves open a little doorway, by which he enters from below, and has another opening on the opposite side by which he can escape should an enemy seek to attack his house. If rain or wind assails the house, all that he has to do is to plug up the two openings with moss, and there he is, as neatly housed as any little brownie in the story-books.

Three more burrowers we must notice, the echidna and the duckbill, or duck-billed platypus, and the jerboa. The first two of these animals lay eggs, and belong to the strange families of Australasia, where the animals are so different from the animals of the rest of the world. The echidna, which is an ant-eater, makes his home underground without difficulty, thanks to the enormous power which he possesses in his long and sharp claws. The duckbill, however, though his home is on land, gets his living in the water. Long experience of the natives has taught him to be very cautious, and he selects for his home a quiet stream opening out into reedy, solitary pools, in which he can find his food of vegetable matter, shell-fish, worms, and so forth.

In order that he may gain the water without attracting attention, the duckbill enters from a tunnel which runs down from his home below the surface of the pool. This tunnel winds up through the soil for as much as fifty feet, and leads to a big, well-shaped chamber, which is lined with grass and is cosy and secure. In order to let in air to the dwelling, the duckbill drives a second tunnel from the sleeping apartment to the surface of the soil, making the opening in the midst of thick vegetation where it cannot be discovered, except by the marvelous eyes of the Australian native. The duckbill has in this second tunnel a way of escape, should he be attacked from the first tunnel; but he will always take to the water if he can, for with his webbed feet he makes but poor progress on land.

THE JERBOA'S HOUSE IN A MAZE

It is no easy matter for an intruder to force its way into the home of the little jerboa which is called the kangaroo rat. This little animal makes several entrances to his castle. Each entrance leads into a number of branching alleys, but only one leads toward the nest. Most of the others are blind alleys. Every entrance has a passage to some other entrance, and though each entrance has a passage to the nest it is hard to find. The jerboa is a wise little animal, and each time he goes in or out, he closes up the passage to his nest. Inside the earthen door, the hallway takes a turn, and leads the way into a beautiful little chamber. It is as pretty as the nest of a hummingbird, and is padded with fine grass, silk from weeds and soft downy feathers. The jerboa is a provident little fellow too, and another passage leads from the nest down to a storeroom which he fills with the seeds of sunflowers to feed him and his family when the winter comes.

This glance at a few of the clever home-builders of the animal world convinces us that in their way these little builders are not to be surpassed among men.

THE NEXT STORY OF NATURE IS ON PAGE 5661

THE THEATRE WHERE SHAKESPEARE SAW HIS PLAYS



A performance in the Globe Theatre, Southwark, where Shakespeare himself acted.



A scene from a Shakespeare play: Meeting-place of the Jews in "The Merchant of Venice."

WILLIAM SHAKESPEARE

THE HERO OF THE WORLD OF BOOKS

CONTINUED FROM 5489

WILLIAM SHAKESPEARE, acknowledged by all nations as the most wonderful genius that ever, in any age or land, wrote books, was born in the heart of England, April, 1564, at Stratford-on-Avon, one of the sweetest places in the world. His family were plain country people. John Shakespeare, his father, son of a farmer, was a respected tradesman who rose to be alderman and high bailiff of Stratford; and his mother, Mary Arden before marriage, was a well-to-do farmer's daughter.

The boyhood of Shakespeare was, in all probability, passed like that of any other tradesman's son of the time, with the healthy sports of a rural town for pastime, and the local grammar school as his home of learning. He had an excellent teacher at the grammar school, Master Simon Hunt. The boy had to be up betimes to take his place in the old grammar school, which is still standing, though considerably altered; for lessons began at six o'clock in the morning in the summer weather, as daylight was precious in those days, when such wonders as gas and electric light were still undreamed of. But he had not far to go "with his satchel and shining morning face, creeping like snail, unwillingly to school," as it was less than ten minutes' easy walk from his father's house in Henley Street to the local grammar school.

We can see him in fancy, dressed just like the other boys of the town, in a long, loose cloak hanging nearly to his ankles, with short, wide sleeves, through which his arms were thrust. But his cloak would not altogether hide the more picturesque part of his attire, which consisted of a short, well-fitting jerkin, his puffed hose sticking out from beneath the waist to the thighs, above his long, dark-colored stockings. His shoes were strange affairs that bulged somewhat at the toes, being tied with long ends of their own material, and the satchel wherein he carried his books was the only thing about him that a schoolboy of our time might wear without attracting the attention of every passer-by.

As for the boy himself, we know him for a bright-faced lad with high forehead and dark, abundant hair, his eyes of a light hazel color, full of mischief and healthy merriment. Whether he was a diligent scholar, the pride of Master Hunt, or something of a trial to that worthy teacher, we do not know; but the poems which he wrote in after life are so full of varied learn

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ing that we cannot but suppose the headmaster, who was famous for his teaching of Latin, found young Will Shakespeare one of his brightest and aptest pupils.

The boy, always a poet at heart, received at the grammar school an education which enabled him to glean, in after life, from all the harvests of the world's learning, though he was not an exact scholar. He left school too early for that—probably when he was about thirteen.

What young Shakespeare did immediately after he left school is not certainly known. No doubt he helped his father, who was becoming less prosperous; and perhaps he had some experience in a lawyer's office, for later he showed a clear knowledge of the law and of legal ways, and no one can tell when he gained it if it were not during his youth.

Companies of players visited Stratford in those days. Not far away was Kenilworth, where gorgeous masques were arranged in honor of Queen Elizabeth when Shakespeare was about eleven; and at Coventry—a neighboring place—festivals of acting were held from time to time. It is clear, then, that Shakespeare, when a boy, knew something of the drama.

As a young man the poet seems to have been rather rash and headstrong. At any rate, when only eighteen he married Anne Hathaway, a farmer's daughter eight years older than himself, living at Shottery, a hamlet adjoining Stratford; and three or four years afterwards he found it convenient to leave his native district and seek his fortune in London. No written account of Shakespeare's departure from his home has been preserved, but the story is that he joined other wild spirits in a poaching expedition to Sir Thomas Lucy's park at Charlecote, was caught and punished, and then wrote such annoying verses about Sir Thomas that it became necessary for him to run away from that magistrate's anger. Certainly, many years after he caricatured Sir Thomas as Mr. Justice Shallow.

Of all the men who tramped wearily to London in the olden times, hoping to make their way in the world, none probably had a sadder heart than William Shakespeare. He had left behind him, in the place he loved, a wife and three children, a father sinking into poverty, a reputation for troublesomeness; and as yet he had not done anything to make people think well of him.

SHAKESPEARE'S TEN WONDERFUL YEARS

Ten years passed away, ten great years for Shakespeare, and then he returned to Stratford a comparatively rich man, admired by the greatest in the land, a favorite of a queen; re-established his family, and for use during his visits home bought the largest house in the town. How had it happened?

On reaching London young Shakespeare seems to have become connected quickly with the theatres, at first, according to tradition, as a minder of the horses on which some of the richer play-goers had arrived. It has been suggested that he organized a service for this purpose, taking loungers round the theatre into his employment. Before long he had been accepted as an actor, and next became busy rewriting unsatisfactory plays, or joining with others in composing new plays. A few years later his genius found expression as an original dramatist, though always working on borrowed materials, until he was admitted, even by the rivals who had been jealous of him, to be the first playwright and poet of his day.

He does not seem to have been a brilliant actor, and even when his own plays were acted he never had any important part to fill in them. Fortunately for the world, he was something far greater than the greatest actor that ever lived, and it is to the credit of the Londoners of his time that his series of great comedies and tragedies, which began, most likely, with "Love's Labour's Lost," and ended with "The Tempest," met with so hearty a reception that their author, who had also become part owner of the Globe Theatre, was a comparatively rich man in the year 1600.

WHAT A THEATRE WAS LIKE IN THE TIME OF SHAKESPEARE

The most successful years of his life came after 1600, when his popularity both as a dramatist and an actor was at its highest, and the success of the Globe Theatre and the Blackfriars Theatre, in which he also had a share, brought him a good income. The theatres of those days did not resemble the luxurious buildings of our time. Outwardly, they looked not unlike a sort of castle tower without a roof. Around the inside of the walls the seats were fixed in three galleries above each other, and from one side the



SHAKESPEARE AT AGE OF 19 SITTING IN ANNE HATHAWAY'S COTTAGE AT STRATFORD



THE COTTAGE OF ANNE HATHAWAY, WHO BECAME SHAKESPEARE'S WIFE

stage was built out, occupying almost one half of the interior.

No scenery was used, and part of the audience sat in boxes behind and above the stage, and even at times on the stage itself, while the people in the arena or pit had to stand. Nor were there any actresses in Shakespeare's time. The female parts were all performed by boys or young men dressed like women, and thus the great dramatist, who conceived such sweet and noble women as Rosalind and Desdemona, never saw them embodied by actresses.

SHAKESPEARE LEAVES LONDON AND RETURNS TO HIS NATIVE TOWN

So successful was Shakespeare in the later days of his life in London, that his income as writer, actor and manager amounted to from $15,000 to $20,000 a year in the money of our day. He had a house near the Blackfriars Theatre, but his family still lived in Stratford. He was a man of good business ability, and as his wealth increased he purchased more and more property in his native town. About 1611, he retired there and after some years of ease, died on April 23, 1616, when only fifty-two, and was buried in the chancel of the parish church.

And now into the quietness of the shaded parish church come, from all parts of the world, reverent pilgrims, who gaze with full hearts at the strange inscription on the slab of stone in the chancel floor under which rest the remains of the great hero of the world of books. A strange warning inscription it is, but perhaps necessary in the days when the bones of the dead were gathered after a while into the common charnel-house:

"Good friend, for Jesus' sake forbear
To dig the dust enclosed here;
Blest be the man that spares these stones,
And curst be he that moves my bones."

It is the homely rhyme of one who never guessed how sacred his grave would be to all the generations of men.

His verse might endure, but for himself



WILLIAM SHAKESPEARE AS A BOY

his last modest request craved only an unmolested tomb. There spoke the Stratford lad come home. But in the interval between his going and his coming great things had happened.

THE COUNTRY LAD WHO BELONGS TO ALL TIME

The true life of Shakespeare is in his books. Into them was put that which has taken captive the minds of men, and with one consent they have applied to the poet in his last resting-place his own beautiful words which he put into the mouths of Cymbeline's sons:

SHAKESPEARE IN TROUBLE & IN TRIUMPH



This picture, by Thomas Brooks, illustrates a well-known story of Shakespeare's youth. The poet is said to have been arrested for illegally hunting deer in the forest at Stratford and brought before the magistrate, Sir Thomas Lucy. It is quite possible that the story is true, and certainly in later years Shakespeare made sly fun in one of his plays of this same Sir Thomas, which seems to show he had some feeling against him.



In this picture, by Eduard Ender, Shakespeare is seen at the height of his fame in London, reciting his great tragedy of "Macbeth" before Queen Elizabeth and a group of her courtiers. Although we have no knowledge that such an event ever took place, it is certainly pleasant to contemplate the greatest poet thus entertaining the greatest English queen in that wonderful age when the British Empire came into being.

"Fear no more the heat o' the sun,
Nor the furious winter's rages;
Thou thy worldly task hast done,
Home art gone, and ta'en thy wages;
Fear no more the lightning flash,
Nor the all-dreaded thunder stone,
Fear not slander, censure rash,
Thou hast finished joy and moan,
Quiet consummation have,
And renownèd be thy grave."

What kind of man was William Shakespeare, so simple in his birth, life, and death, so lasting in spirit and influence? The character of the poet—the impression he made on those who knew him—is outlined in a number of jottings by his friends in prose and verse. They all picture him as a delightful companion. The older writers of his day, when their first jealousy of the country-bred poet was over, were sorry they had felt jealous, and acknowledged him with admiration as an open-hearted friend, loyal, and cast in the gentlest mould.

As his life went on, Shakespeare seems to have known much personal sorrow, and with its coming the tone of his mind changed, so that from being merry and careless, full of rather wild and frolicsome spirits, and fond of the "jigging rhymes" his friend Kit Marlowe had forsaken for blank verse, he grew grave, tenderly humorous, thoughtfully fanciful, graciously wise. As his thoughts of life deepened with his changing spirits, his mastery of the art of writing in a freer style, with power and beauty, increased. So to understand Shakespeare's plays we must know in which part of his constantly expanding life each was written. Four words will suggest the changing spirit of the poet's writing—jollity, romance, strength, peace. They mark natural stages of human growth. In this, as in so much else, Shakespeare seems to have been a miniature of mankind.

We must now pass along his life again, observing it through his works, and noting in a few outstanding examples the growth of his character and art.

The period of Shakespeare's activity as a writer balances about the year 1600, beginning about twelve years before that date and ending twelve years afterwards —1588 to 1612.

Though he was a poet all the while, we must remember that he was by business an actor, and began to write at first as an improver of old plays for acting, and not for reading. In this attempt he joined with others, such as Marlowe, who at first had more experience than himself as a writer. At this time people were eager to *see* the history of their country acted, for they had few opportunities of reading it. One of the first plays that Shakespeare revised was the "First Part of Henry IV," and the first play of his own making was "Love's Labour's Lost," written in 1590 or 1591. It remains the best example of his youthful manner.

The "Comedy of Errors" and "Two Gentlemen of Verona" were written in the same early period. These plays are light and bright, showing gaiety of spirits, and they jingle with many rhymes. They include, too, pretty poetical touches, such as the sweet description of a brook's journey:

"The current that with gentle murmur glides
Thou knowst, being stopped, impatiently doth rage;
But when his fair course is not hindered
He makes sweet music with the enamelled stones,
Giving a gentle kiss to every sedge
He overtaketh in his pilgrimage;
And so by many winding nooks he strays,
With willing sport, to the wild ocean."

During this 'prentice period the poet wrote his first tragedy, "Romeo and Juliet," a play compounded of poetry and love; and then passed on to the dainty fancies, bright and aerial, of "A Midsummer Night's Dream." Before the end of the year 1594 he had begun to write historical plays seriously. "Richard III" was now written, and "King John."

SHAKESPEARE'S LOVE OF ENGLAND

No other poet has so passionately demanded love for "Our dear mother, England," as Shakespeare. Such words as these close "King John:"

"This England never did nor ever shall
Lie at the proud foot of a conqueror,
But when it first did help to wound itself.
Now these her princes are come home again,
Come the three corners of the world in arms
And we shall shock them. Nought shall make us rue
If England to itself do rest but true."

The same note was sounded in "Richard II," where John of Gaunt is the mouthpiece of an exultant patriotism:

"This royal throne of kings, this sceptered isle,
This earth of majesty, this seat of Mars,

SCENES FROM SHAKESPEARE'S PLAYS

Shakespeare pictures would make up a gallery almost worthy of the plays; except the Bible, no book has given so many opportunities to the painter as Shakespeare's plays. Here we give pictures from eight scenes of the plays, painted by famous artists.



ROMEO AT THE TOMB OF JULIET—FROM "ROMEO AND JULIET"

Romeo, returning from exile to find Juliet in the tomb, mourns her as dead, and dies himself as she awakes.



OTHELLO WATCHES THE SLEEPING DESDEMONA—FROM "OTHELLO"

Desdemona, "a maiden never bold," falls in love with "what she fears to look on," and marries Othello.

This other Eden, demi-paradise,
This fortress built by Nature for herself
Against infection and the hand of war,
This happy breed of men, this little world,
This precious stone set in the silver sea,
Which serves it in the office of a wall
Or as a moat defensive to a house,



"You may be Christ or Shakespeare, little child: a savior or a sun to this lost world." A picture of Shakespeare in his cradle, painted by T. Brooks in the room where the poet was born.

Against the envy of less happier lands,
This blessed plot, this earth, this realm, this
. . . . . England,
This land of such dear souls, this dear, dear land."

At the Christmas of 1594 Shakespeare was acting before Queen Elizabeth, and evidently was a favorite. He was now known and admired as a poet as well as a playwright, for both "Venus and Adonis" and "Lucrece" had appeared, and his sonnets were probably written and privately circulated, though they were not printed till many years after. In 1596 the perfect comedy of "A Merchant of Venice," was composed; and before the end of the century the English historical plays had been brought to a climax in "Henry V."

IF SHAKESPEARE HAD DIED BEFORE

But the writings that have made him supremely great in the eyes of all the



FALSTAFF REVIEWING HIS RAGGED TROOPS—FROM "KING HENRY IV"
A wit, thief, glutton, coward and boaster, yet no character of Shakespeare's is more alive with merriment.



ARTHUR WITH HIS MOTHER AND THE EARL OF SALISBURY—FROM "KING JOHN"
Arthur's appeal to Hubert is perhaps the most pathetic pleading in all Shakespeare's plays.

generations that have followed him had yet to be written. If Shakespeare had died in the year 1600 he would have lived in men's memory as a poet of rare insight, whose work in words would defy the hand of Time, whose power he so hauntingly described:

"Time's glory is to calm contending kings,
To unmask falsehood and bring truth to light,
To stamp the seal of time in aged things,
To wake the morn and sentinel the night,
To wrong the wronger till he render right,
To ruinate proud buildings with thy hours,
And smear with dust their glittering golden towers.

"To fill with worm-holes stately monuments,
To feed oblivion with decay of things,
To blot old books and alter their contents,
To pluck the quills from ancient raven's wings,
To dry the old oak's sap and cherish springs,
To spoil antiquities of hammered steel,
And turn the giddy round of fortune's wheel."

THE LOVELY SONG TO SYLVIA

Had he died in 1600 he would have been known as a writer of lovely songs that seem to sing themselves as the winds and waters sing—songs like that lovely song to Sylvia:

"Who is Sylvia? What is she
That all our swains commend her?
Holy, fair, and wise is she;
The heaven such grace did lend her
That she might admiréd be.

"Is she kind as she is fair?
For beauty lives in kindness;
Love doth to her eyes repair
To help him of his blindness,
And, being helped, inhabits there.

"Then to Sylvia let us sing.
That Sylvia is excelling;
She excels each mortal thing
Upon the dull earth dwelling.
To her let us garlands bring."

He would have been known as a writer of delightful comedy and noble history; but he would not have had the reach and depth and strength of mind we now see in him.

What it was that came to Shakespeare and saddened him, and set him to the task of sounding the profundities of character and passion, we shall never know. But for some reason he became more gravely meditative. He felt himself growing old:

"That time of year thou may'st in me behold,
When yellow leaves, or none, or few, do hang
Upon those boughs that shake against the cold,
Bare ruined choirs, where late the sweet birds sang.
In me thou see'st the twilight of such day
As after sunset fadeth in the west,
Which by and by black night doth take away."

Even in the lovely open-air tale of "As You Like It" there comes a minor note prophetic of much to follow:

"Blow, blow, thou winter wind,
Thou are not so unkind
As man's ingratitude.
Thy tooth is not so keen
Because thou art not seen,
Although thy breath be rude.

"Freeze, freeze, thou bitter sky,
Thou dost not bite so nigh
As benefits forgot.
Though thou the waters warp,
Thy sting is not so sharp
As friend remembered not."

And now it was—perhaps because in his prosperity he had greater leisure for reading and thought—that he passed on to narrate noble history in "Julius Cæsar;" to sound the depths of thought in "Hamlet;" to study with a terrible fidelity the fatal blindness of jealousy in "Othello;" to lay bare the secret workings of unchecked ambition in "Macbeth;" and to rack our very hearts with tragedy in "King Lear." All these stupendous plays were written between 1600 and 1606. And then followed, towards the end of Shakespeare's writing days, a restful period, and he finished his labors with the gentle, pensive wisdom of "Cymbeline," "The Winter's Tale," and "The Tempest," which is thought to be his latest complete work.

ARIEL'S SONG OF FREEDOM

To the very end the poet kept unimpaired his elf-like fancy and his tuneful touch. What could be more graceful than the song of freedom of the happy sprite, Ariel, in "The Tempest?"

"Where the bee sucks, there lurk I;
In the cowslip's bell I lie,
There I couch when owls do cry.
On the bat's back I do fly
After the summer merrily.
Merrily, merrily, shall I live now
Under the blossom that hangs on the bough."

TWO OF SHAKESPEARE'S HEROINES



OPHELIA AND THE GUILTY KING AND QUEEN OF DENMARK—FROM "HAMLET"
This picture, by Miss Henrietta Rae, is published by permission of the Corporation of Liverpool.



ROSALIND GIVES ORLANDO A CHAIN—FROM "AS YOU LIKE IT"
This picture is from the painting by Harold Speed.

The longer Shakespeare wrote, the more he built up his plays on the characters of the people who were introduced. He might borrow the main incidents from other men's writings—he nearly always did that—but the characters were his, and the drama of their development was original. For the groundwork of his stories he ransacked Europe, old and new. It mattered not to him where the scene was laid. He not only traced for his patrons the stirring history of their own land, but he carried them to Greece, ancient Rome, Italy, France, Spain, Germany, Egypt, Cyprus, Denmark, Scotland, and early Britain.



KING LEAR GIVES CORDELIA'S SHARE TO HER SISTERS—FROM "KING LEAR"

Cordelia, refusing to flatter the vain old king, her father, is cut off in favor of her cunning sisters.

SHAKESPEARE'S POWER OF UNVEILING THE PAST

Spirited away to Rome in the days of "the mighty Julius," we learn far more of the Roman public spirit from Shakespeare than we can realize for ourselves among the eloquent ruins of the palaces he never saw. He has the power of revealing the secrets of centuries of history in a few speeches. Through his Shylock, for instance, we understand the position of the Jew in the Middle Ages far better than we could know it through a library of histories.

This poet gave all womanhood afresh to the world of books by his marvelous portraits of heroines, daring, noble, or sweet. Having exhausted the lands of reality, he annexed the kingdoms of the air, and peopled them with such fascinating sprites, monsters, ghosts, and witches—Ariel, Caliban, Puck, Titania, and the rest—that they disarm our reason by charming our fancy. We have majestic thought surging through deep-toned verse; melody of words in haunting songs, snatches from Nature's eternal hymns; humor droll, or sly, or rollicking; and homely wisdom from simple tongues.

THE SUPREME MAN OF THE WORLD

It seems as if in Shakespeare the complete scale of the human mind and utterance had been sounded. The world ripened rapidly into the age of Queen Elizabeth, and produced, from the simplest surroundings, a supreme man, so comprehending that all the world agrees with what Matthew Arnold said of him:

"All pains the immortal spirit must endure,
All weakness which impairs, all griefs which bow,
Find their sole speech in that victorious brow."

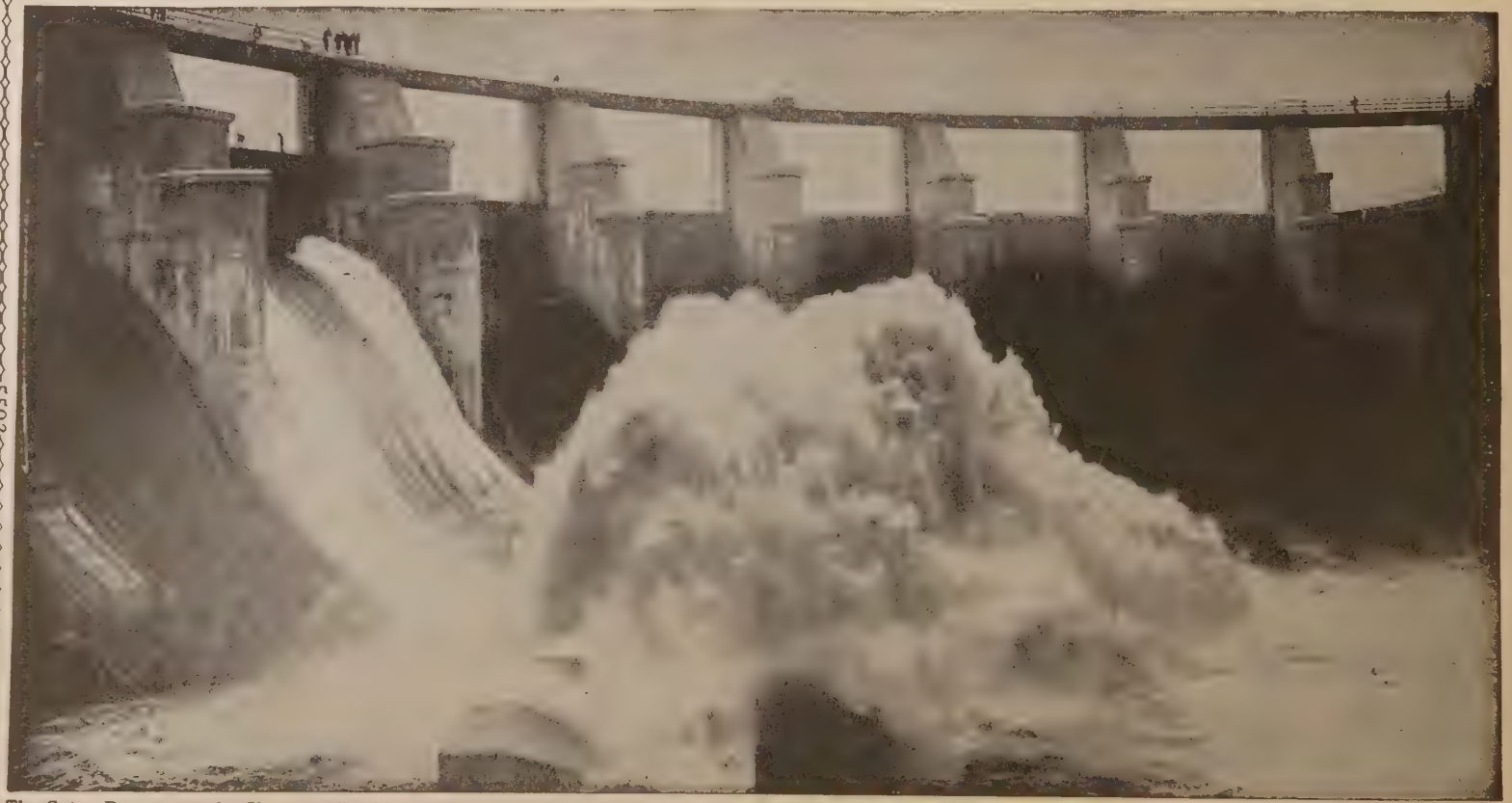
THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5673.

HENRY VIII. DISMISSING CARDINAL WOLSEY



Henry VIII. was a despotic king, who allowed nothing to stand between him and his desires. When Cardinal Wolsey could not persuade the Pope to cancel Henry's marriage with Queen Catherine, the king cast his minister from power. When Wolsey knew that he had lost the king's favor, he staked everything on a final interview. Henry acted at first as though he were going to receive Wolsey back into favor, but at last the cardinal was dismissed coldly, and never saw the king again.

WASTE WATER FLOWING OVER THE SPILLWAY, GATUN DAM



5592

The Gatun Dam across the Chagres valley is a mile and a half long, and a third of a mile thick at the bottom. A core of stone was made, clay was forced in between the stones, and then thousands upon thousands of loads of earth were dumped upon it. In the centre of the valley was a small hill, and here the dam is of concrete, with fourteen large gates near the top. This is called the spillway. When the water in Gatun Lake becomes more than eighty-five feet deep, some of the gates are opened, and the waste water rushes out with tremendous force, and finds its way into the Atlantic.

WHAT THIS STORY TELLS US

FOR four hundred years the idea of a canal across the narrow isthmus joining North and South America has captivated the imagination of men. The work seemed so difficult and so expensive, however, that no one tried it for many years. When the Suez Canal was completed, Ferdinand de Lesseps, who had planned and managed that work, determined to join the Atlantic and the Pacific. He failed, partly because of unhealthful conditions on the isthmus, and finally the United States undertook the work. This story tells how disease was conquered first, and then how, by the aid of brains and machinery, the immense task of digging the Canal was done. Now ships easily pass from ocean to ocean, climbing eight-five feet above the sea by means of locks, and then descending again. Our pictures will give you an idea of the difficulty of the work and of the appearance of the Canal and the locks.

DIGGING THE PANAMA CANAL

EVER since explorers found that only a few miles of land separated the Atlantic and Pacific Oceans between the two continents, men have spoken of joining these two oceans by digging a canal. It was evidently so expensive and so difficult that no real attempt was made until the year 1878, when a French company secured from the Republic of Colombia the right to dig a canal through the Isthmus of Panama. At the head of the company was Ferdinand de Lesseps, who had succeeded in separating Africa from Asia by means of the Suez Canal, and spurred on by his success in this great work, he felt sure that he could accomplish this task on the other side of the world quite as easily.

It was found, however, that the two pieces of work could not be compared. The Suez Canal is only a great ditch through the land or through shallow lakes. While the weather is hot the climate is not particularly unhealthful for Europeans and workmen could be secured from the neighboring tribes.

In Panama tropical conditions prevailed. During the rainy season vegetation grew up almost in a night, drainage was difficult, and it was found that many men engaged on the work died. Mountains had to be dug through. The attempt to get the inhabitants of the district to work was unsuccessful. Why should they work? The soil was so rich that a few hours' work in the course of a month would furnish abundant food, and therefore they could see no reason why they should work, hour after hour in the rain or the sun, carrying away soil, blasting the rock and doing the other hard tasks which are necessary to be done in cutting a canal.

At first it had been announced that $127,000,000 would be sufficient to do the work; then the larger sum of $180,000,000 was announced, and finally it was seen that this latter sum would not begin to see the work completed. Though Mr. De Lesseps' plans were good and though much of the work done was well done, some bad men got control of the company, much money was stolen and the company was thrown into debt. Finally De Lesseps was arrested, though it seems that he himself had not been guilty of dishonesty. The French people would not put any more money into the Canal and so for several years the whole plant lay idle. The houses of the Canal workmen were hid in vines in the undergrowth which sprang up.

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It seemed that all traces of the French attempt were to be wiped out.

Meanwhile in the United States there was interest in the Canal and this interest grew as the Western states developed. Some men wished to buy out the French company and continue the work across the Isthmus of Panama. Others preferred to cross the Isthmus of Nicaragua, further to the north. Here the distance between the Atlantic and Pacific was much wider, but it was expected to make a large lake and a river a part of the Canal.

Another marvelous project was to cross the Isthmus by means of a ship railway. An immense frame or cradle capable of receiving the largest ship was to be constructed. This was to be mounted upon many-wheeled trucks running upon several railway tracks. These tracks on each side of the Isthmus were to extend into the sea. The cradle would be pushed out into the water, the ship was to sail in and the powerful engines would then draw the trucks out upon the land and carry the ship over to the other side of the Isthmus, where it would be lowered into the sea.

Finally, after much discussion, the Panama route was chosen, the French company was bought out for $40,000,000 and the United States was ready to begin. Just then the Republic of Colombia seemed to intend to go back upon the bargain it had made and to charge the United States a much higher price than had been agreed upon for the right to cut the Isthmus. The citizens of the Isthmus were unwilling to see so much money lost and therefore they suddenly declared themselves independent of Colombia in 1903, and created the Republic of Panama. An agreement was immediately made with the new republic. The United States agreed to pay $10,000,000, and after ten years had passed to pay $250,000 a year.

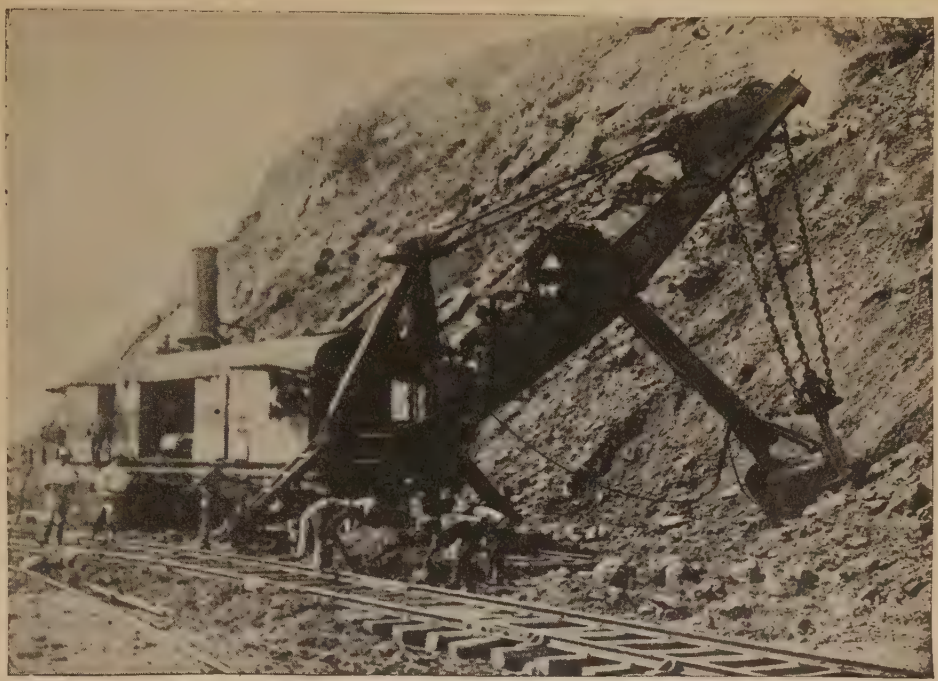
The building of a sea-level canal was at first mentioned, but soon, though less than half of the committee which had charge of the work reported in favor of a lock canal, it was decided to build the latter type, that is to say, a canal which is not level all the way across but one in which the boats are raised by means of locks as explained in another part of our book. The Republic of Panama granted to the United States a strip of land five miles wide on each side of the Canal. This is called the Canal Zone. Also the privilege of controlling the health conditions of the cities of Colon and Panama was granted, though the United States has nothing to do with the government of these cities outside of the health matters.

Now let us see what has been done. Beginning in Limon Bay on the Atlantic side near Colon, the Canal extends 500 feet wide and 41 feet deep to Gatun, about seven miles away. Here are the first locks, three of them, each a thousand feet long. A great dam, which is more like a hill, has been thrown across the valley of the River Chagres. This hill is so thick and contains so many million loads of earth and stone that it is not believed that the force of the water can ever break it, though the river sometimes rises 25 feet in 24 hours. This dam makes a great lake of the surrounding country and through this lake the width of the channel is for a part of the time more than one thousand feet.

The most interesting part next to the building of the great dam is possibly Culebra Cut, where the Canal cuts directly through a mountain. We show you a picture of this and it will make you realize how small men are. This work has been done chiefly by means of steam shovels, which are also shown you in the picture. These great machines run by engines scooped into the side of the hill, gathering up hundreds of pounds of dirt, soft rock and shattered stone. The man in charge with a little twist of the wrist turned the great scoop so that its load dropped into a car standing near. When the cars were full the engine pulled off to a section which was to be built up rather than cut down.

The steam shovels were of various sizes. The one called the "95-ton shovel" seemed to do the best work. This carried as high as five cubic yards at a time. When a rock was too large to go inside the shovel it was blasted into smaller fragments. The trains which carried away the dirt and rock were very long, as it was sometimes necessary to carry the material many miles. Some of it was used in filling in swamps, and much was used to extend the breakwater upon the Pacific side.

THE MONSTER THAT ATE THE HILLS



Without the steam shovel such a work as the Canal could never be accomplished. Here you see the great scoop holding five cubic yards, gathering up earth and stone which had been broken up by the discharge of dynamite or blasting powder. In the next picture you will see what becomes of the load. Five cubic yards weigh several thousand pounds.



The man in charge of the steam shovel, by moving the lever, raised it, and the great arm to which the scoop was attached, swung around and deposited its load in a dump car. When all the cars of the train were full the engine drew them to a place where it was desirable to fill in rather than to dig out.

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In 1855 a railroad was constructed across the Isthmus and this road is now owned by the Government. The change in the plan of the Canal would bring a large part of the tracks under water, and therefore a new line was laid out for it. Much of the material taken from the great cuts was used to make embankments for this road. When enough material had been dumped in any one place, by a very ingenious contrivance the whole railroad was lifted and moved several feet to the right or left as the case might be. Of course this work was slow and the track was not very smooth. There were dozens of these temporary railroad tracks along the Canal occupying one position to-day and an entirely different one next week.

Culebra was the most difficult and most uncertain part of the work, for just when the men thought they had gone far enough, the earth slid down from the sides again, sometimes filling up the Canal entirely. These slides continued after water was let into the Canal, and once blocked the entire passageway. Indeed it is not certain that they have stopped entirely yet.

On the Pacific side the two principal locks by which our ship descends from its height are at Miraflores. Here the Canal drops fifty-five feet. It has already dropped thirty feet at the Pedro Miguel Locks, for much of the Canal is eighty-five feet above sea-level. The variation in the tide is much greater on the Pacific coast than on the Atlantic.

Though the actual work in digging the Canal was wonderful, far surpassing anything which has ever been accomplished before in the history of mankind, the work of the Government in making the Isthmus healthful and in taking care of its army of laborers was even more surprising. Years ago, both Panama and Colon were subject to yellow fever, which at times almost paralyzed business. Since it has been discovered that yellow fever is always caused by the bite of a particular kind of mosquito, the Government engineers had a basis upon which to work. The sanitary force under Dr. W. C. Gorgas, installed a system of sewerage in the two cities, caused the streets to be paved, and prevented the collection of heaps of garbage and stagnant water in which mos-



Photograph by Brown Bros.

The most stubborn part of the cut through Culebra Mountain was the Cucaracha slide. Here the side of the hill slid down into the canal after water had been admitted, entirely filling it. Some of the material was pumped out by dredges and the remainder was taken out by steam shovels. The struggle with the slides caused the death of Colonel Gaillard, the engineer in charge of this part of the work.

GATUN LOCKS AND THE GREAT GATES



Here is a view of the Gatun locks looking toward the Atlantic Ocean. The first gates are to keep out the tides. When the ship enters the first chamber the gate is closed behind and water is let in from the lock above, raising the boat over twenty-eight feet. The gate to the middle lock is then opened and the water rises another twenty-eight feet. This process is then repeated and the boat rises another twenty-eight feet and passes out into Gatun Lake. The locks will accommodate a ship 1,000 feet long.



This picture shows a pair of the immense lock gates, which open and close like doors. They are thick, as you see, and very strong. Some of them are eighty-two feet high. The machinery to move them, while very strong, is still very easily operated. If by any chance one of them should break or refuse to work, a temporary gate can be set up very quickly.

quitoes might breed. They kept the undergrowth cut down along the Canal and sprayed the ditches with crude oil, thus killing the young mosquitoes. As a result yellow fever has become almost unknown. Before any actual work was done upon the Canal nearly two and a half years were spent in making the region healthful.

Over two thousand buildings were constructed, including offices, hospitals, hotels, kitchens, shops and barracks. Many of the buildings left by the French company were repaired and made of use. It was decided, in order to be sure that the men should have a supply of well cooked and suitable food, the Government must undertake the work. Good wages were paid to the laborers and they were furnished with excellent meals at low prices. Provision was also made for the men who occupied more responsible positions. They were encouraged to bring out their families. The single men lived in barracks or cottages and boarded at the hotels under Government supervision. The married men were furnished with quarters and had the privilege of buying direct from the Commissary Department. This Commissary Department was very important and controlled several important manufacturing plants. It was in reality a great department store. It controlled an ice plant which turned out about 90 tons of ice a day. It baked 14,000 loaves of bread, made 250 gallons of ice cream, roasted a thousand pounds of coffee and was able to take care of 7,500 pieces of laundry a day. Refrigerator cars ran from its cold storage warehouses to different parts of the Zone and every morning the supply train left the central point, depositing such goods as were wanted at the local commissary stations, where the employees and hotels made their purchases. Excellent hospital accommodations were provided at Ancon and Colon.

In the messes arranged for the men the division was by the coin in which the men were paid. One set of accommodations was provided for those on the "gold roll" and another for those on the "silver roll." Generally Americans and Europeans were on the gold roll and the West Indians and the residents of the Zone on the silver roll. The meals of those on the silver roll were charged for at one price, and those on the gold roll at another. In most of the mess halls for the gold-roll employees there were two dining-rooms, in one of which the employees might eat without their coats.

It is estimated that the Canal has cost almost $400,000,000. Such a sum staggers one. In fact, we cannot comprehend this amount of money. So far as we can now see, the Canal can never pay a profit in money. Though the locks can be filled in eight minutes, a considerable time is necessary to take a ship through, and it is estimated that not more than fifty-eight ships can pass through in a single day of twenty-four hours,—for the Canal has been so brilliantly lighted that ships can pass by night as well as by day. The ships are not allowed to pass the locks under their own power, but are towed by electric locomotives. The tolls charged can never be large enough to pay much more than the cost of operating the Canal.

But it was not for direct profit alone that the United States determined to build the Canal. Her ships are at a great disadvantage in trading with Asiatic countries, since the chief seaports are upon the eastern coast, and in order to reach these Eastern markets a ship must first sail across the Atlantic and through the Suez Canal or else go altogether around South America. Then, too, in case of war it would be of great advantage to be able to transfer the Navy from one ocean to the other quickly.

The first boat to go through any lock on the Canal was the little tugboat, Gatun, which was lifted through the three Gatun locks on September 26, 1913. This was a great day for all engaged in the work, for it showed that the end of their labors was at last in sight. Soon larger ships went through.

Since the Canal was completed business has increased rapidly, and many ships go through every day. Not only the United States has benefited, but all the nations of the world, and none more than Canada. The products of British Columbia can reach the markets of the eastern United States, of South America and Europe much more easily than before. Much credit is due to Colonel G. W. Goethals, the chief engineer, and his assistants, all army engineers, for the work they accomplished.

NEXT STORY OF THE UNITED STATES IS IN THIS VOLUME.

SCENES ALONG THE ZONE



When the French Company became bankrupt in 1889 much of the machinery was left on the ground. Here we see hundreds of good locomotives overgrown by vines and eaten up by rust.



The engineers and supervisors moved from one part of the work to another in the railroad automobile, a picture of which you see here. It was like any other automobile, except that it ran on rails.



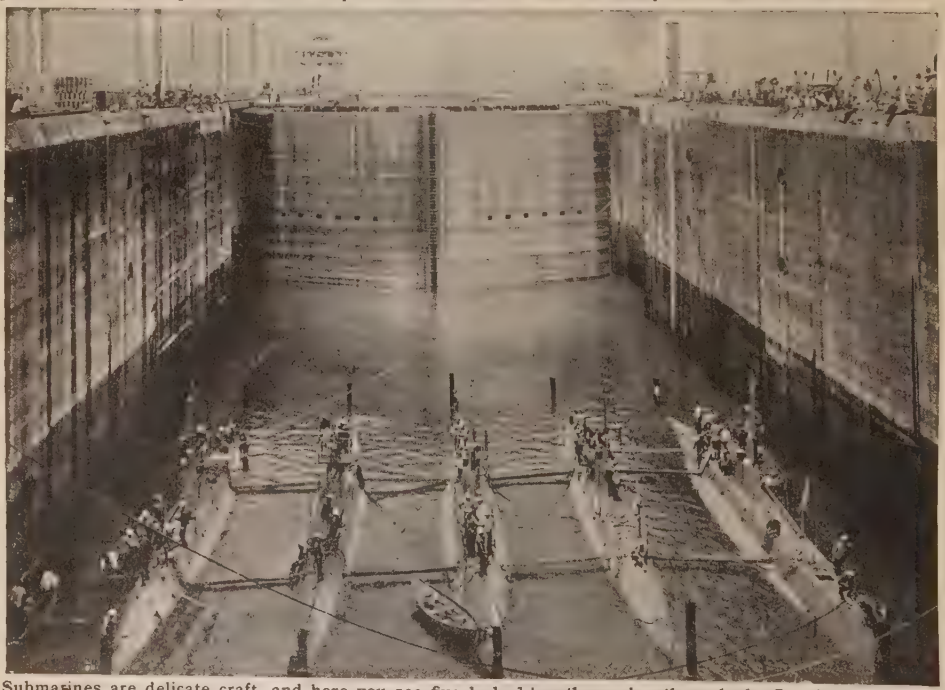
Every provision was made by those in charge of the Canal for the health and comfort of those working on the Canal. Here is a picture of the attractive grounds of the Hospital at Ancon. Owing to the excellent care of the sanitary force, the health record of the Zone was better than that of many American cities. In the French period thousands died of yellow fever and other tropical diseases.

Photographs copyright by Keystone View Co.

INSIDE THE LOCKS WITH THE SHIPS



Here you see a ship in one of the chambers of the great Gatun locks. The electric locomotives seen on the banks on both sides hold the ship steady, now drawing it along, and now holding back. Soon the great gates will open and the water sill seek the lower level. The ship will then be drawn forward, and the gates closed. The process will be repeated three times before the ship has climbed to Gatun Lake.



Submarines are delicate craft, and here you see five locked together going through the Canal. One of the reasons why the Canal was built was to provide a quicker and easier way for the warships of the United States to pass from one ocean to the other. The ship shown above is the Severn, which is the "mother" ship" for the submarines. This means that it carries supplies, and a workshop where repairs can be made.

WHAT THIS STORY TELLS US

TO some of us the most wonderful of all the marvelous inventions, of which we have so many in these days, is the talking machine, no matter by what name we call it. That a flat black disc, covered with tiny lines, should be able to give to us the golden voice of Ternina or Caruso, the wonderful tones of a violin in the hands of a master, the full crash of a brass band, or the winged words of a great orator, seems impossible to believe. Yet we know that it is true. Hardly a boy or girl who reads this story has not heard these instruments many times. This story tells us the whole story of the great invention—how the invention came to be, how records are made, and how they can reproduce for us so marvelously. It also tells how the instrument is used in business offices as well as a means of amusement.

THE TALKING MACHINE

CONTINUED FROM 5531

"DADDY, what makes it talk?" In one form or another that question has been asked by every boy and girl who has heard the modern talking machine, by whatever name it is called, pour forth the golden tones of one of the great operatic artists, or listened to the music of one of the great bands or orchestras.

We all know from our reading in THE BOOK OF KNOWLEDGE, that sound consists of a number of regular vibrations of the atmosphere, striking with a given force, and at regular intervals, the little membrane of the ear, called the tympanum, or ear-drum, causing this little membrane to make an equal number of vibrations to those set up in the atmosphere by the voice of the singer or the notes of the instruments. These vibrations are translated by our brains, but no one can tell how it is done.

In a talking machine record, these sound vibrations are recorded in a permanent form by the use of what is called a diaphragm, which is affected by the vibrations in the atmosphere in a way similar to the effects upon the ear-drum. To this diaphragm of the talking machine is attached a little needle which is called a recording stylus. As the diaphragm of the talking machine is set in motion by the vibrations, this motion is imparted to the little needle or stylus, causing it to move from side to side according to the volume or intensity of the sound communicated to the diaphragm. A soft wax-like tablet or disc is placed on the recording machine, in contact with the little recording needle, and as the stylus is moved by the vibrations of the diaphragm it cuts into the soft material of the disc, which is rotating, thereby tracing on the surface of the wax a spiral line, which is called the sound line. Looked at with the naked eye, this sound line seems to be simply a spiral line traced over the surface of the disc, but if we examined it under a magnifying glass we could see that this spiral line has zig-zag indentations corresponding to the vibratory movements of the stylus.

The wax-like disc on which the sound line is traced is called the "master record." When this master is secured it is put through an electroplating process, whereby a matrix is secured. This matrix is used to procure a die or stamp from which the talking machine records that are sold to the public are stamped or pressed. Many duplicates can be made from this stamp, and this is why they are comparatively cheap.

In reproducing or repeating these sounds, the operation is reversed. In place of the stylus, a reproducer is used. The sound line on the disc sets in motion the reproducer and causes

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it to impart to the diaphragm the movement indicated by the irregular sound line, and this movement against the diaphragm sets up in the atmosphere the vibrations made by the singer or the band. The machine gives back what it has received.

While scientists had known for many years that it was possible to record sound vibrations, the first practical machine patented was in 1877, by Thomas A. Edison. With his instrument it was possible not **only** to record the sound vibrations, but for the first time, by simply reversing the machinery, to "make it talk." People were very excited over this wonderful invention, and believed that great things would come of it. The inventor, himself, saw its possibilities for a number of other applications, several of which—such as the telescribe—have taken many years to realize.

The chief reason why the talking machine was for a long time looked upon as an interesting toy rather than a wonderful machine was because the tinfoil wore off the record after a few repetitions. In 1885, Bell and Tainter patented a talking machine which used a wax cylinder for the record. Much of the work in this machine was done by Alexander Graham Bell, the inventor of the telephone, Chichester Bell and Charles Sumner Tainter, and the experiments and investigations leading up to the patent were conducted in the Bell laboratories near Washington, D. C.

The next stage in the development of the industry was the invention of a spring motor for operating the talking machine. Originally talking machines were operated by storage batteries. This was a great inconvenience and made the machines too expensive for ordinary use. By the invention of the spring motor, or clockwork motor as it is sometimes called, it was possible to make a reliable talking machine which could be sold at a reasonable price. This was indeed an important step in the development of the art, and here also the United States claims the credit because the inventor of the clockwork model was Thomas Hood MacDonald, a citizen of the United States.

Mr. MacDonald was a very busy inventor especially in connection with talking machines, and he contributed a number of other valuable inventions to the art of sound recording and reproducing. The MacDonald Graphophone Grand patent disclosed that a particular speed for the surface of the record must be obtained in order to secure the best results, and this Graphophone Grand patent was largely instrumental in the development and enrichment of the art.

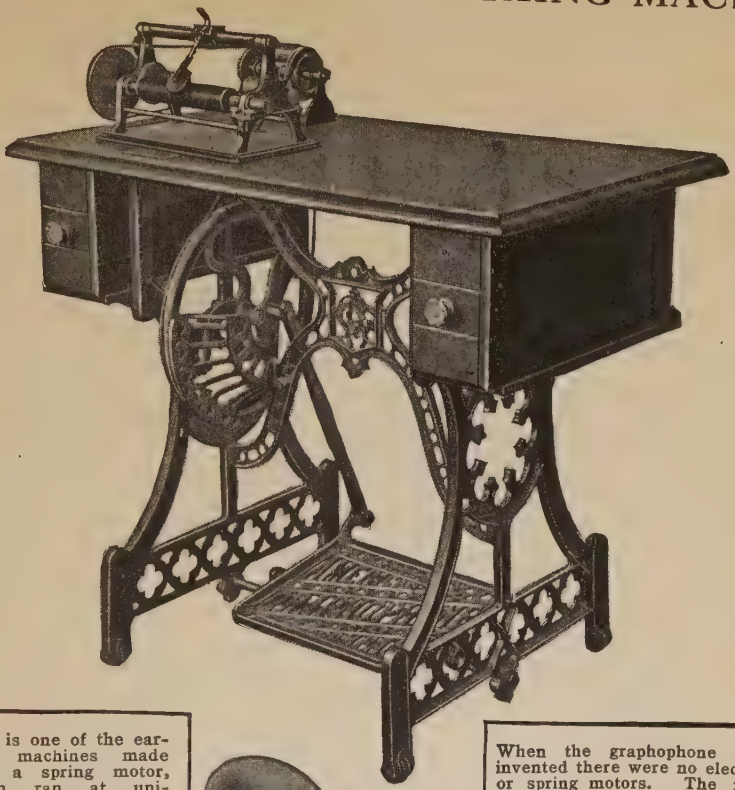
Originally the cylindrical form of record was the only one known, but later the disc record came into use. The disc or flat record is the one now most popular and this form of record is based upon a patent to J. W. Jones. This is also a patent granted by the United States Patent Office, and it covers a process for recording sound in the form of a disc talking machine record and marks a stage in the development and evolution of the art of recording and reproducing sound.

Dozens of men have worked to make improvements on these machines, and they have grown better and better all the time until now it seems as if there could be no other very great improvement. The best machines can give us back the music of a great orchestra, faithfully reproducing the sound of the instruments as they blend together, or we can get the voice of a great singer, or a conversation. The first machines had a metallic sound, but the best ones now have little or none of this, but are mellow and sweet. There are several different machines on the market, called by many different names, such as phonograph, graphophone, and gramophone. All of these names are made from the Greek words which mean to write down sound. Then some are called by special names, as Grafonola, Victrola, Sonora and the like. These names are to distinguish them from the machines of other manufacturers.

The talking machine, or phonograph, was soon very popular, because of its powers of amusement in producing music, songs and speeches. Disc instruments that were made simply to reproduce without recording were sold in large numbers, and the cylinder machines began to go out of use, as the others were so much more convenient.

The manufacture of records has become a vast industry, and endless care is required to maintain a standard that will adequately reproduce good voices and orchestras. Hardly a place now is so isolated that its inhabitants cannot enjoy the world's great operas and other

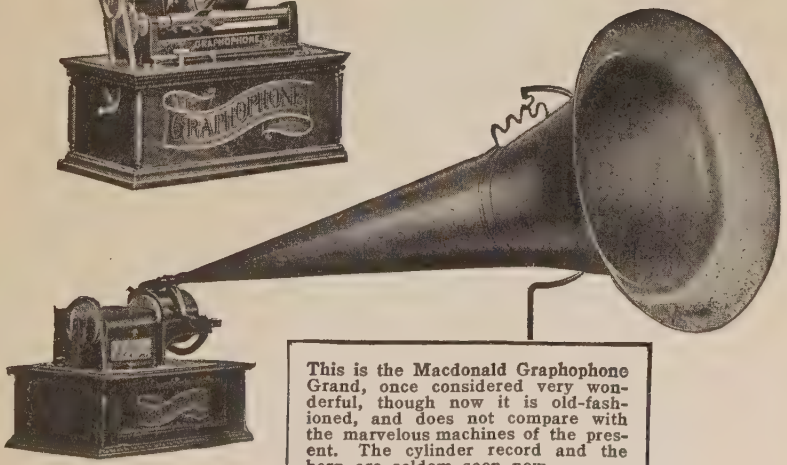
SOME EARLY TYPES OF TALKING MACHINES



This is one of the earliest machines made with a spring motor, which ran at uniform speed. It was a great improvement on the treadle.

When the graphophone was invented there were no electric or spring motors. The first machine was attached to the table of a sewing machine, and was made in a sewing machine factory.

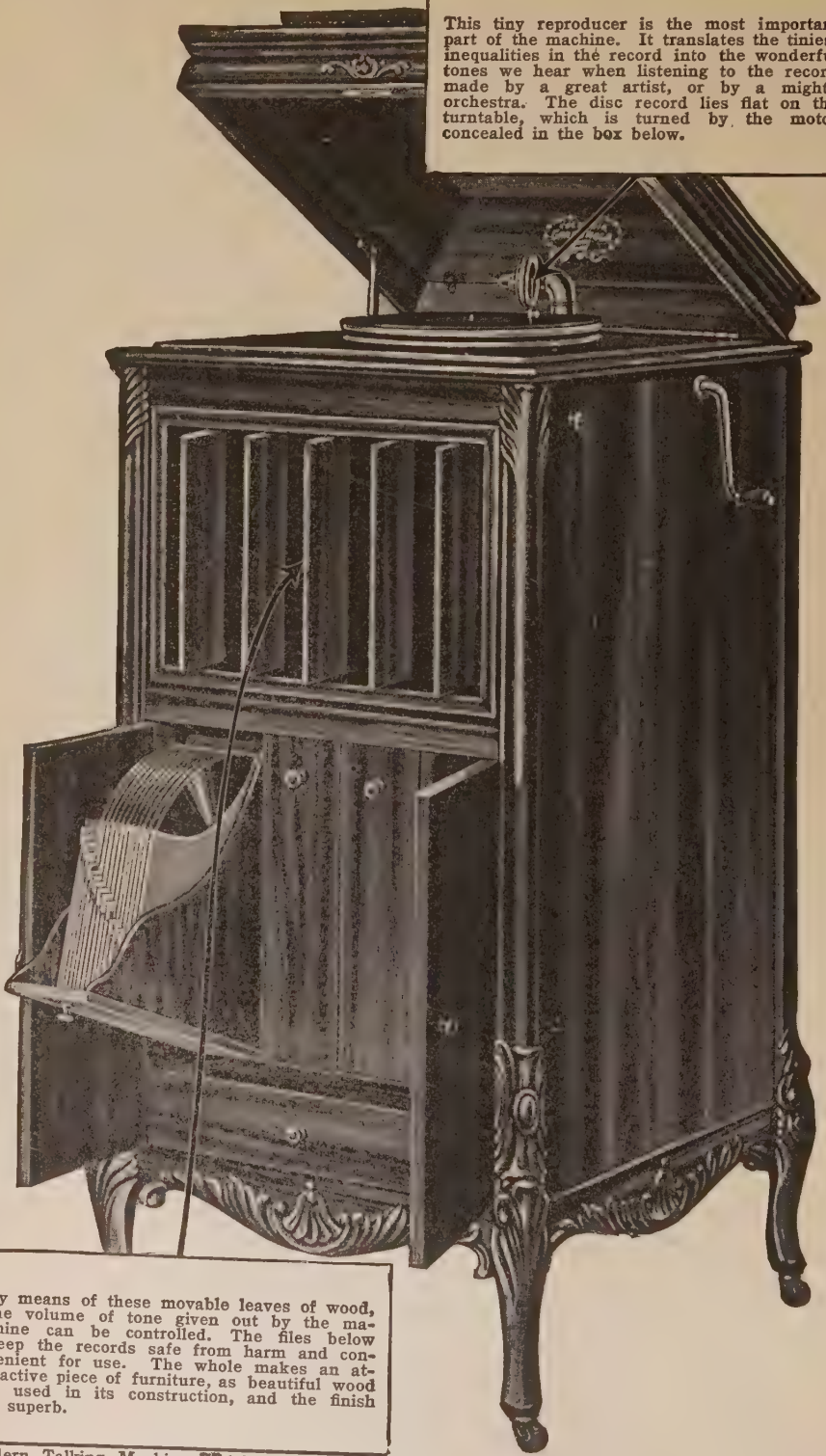




This is the Macdonald Graphophone Grand, once considered very wonderful, though now it is old-fashioned, and does not compare with the marvelous machines of the present. The cylinder record and the horn are seldom seen now.

Here are some early talking machines. The great difficulty at first was motive power, and not until the spring motor, the speed of which could be controlled and kept uniform, was developed, was progress possible.

THE LATEST TYPE OF TALKING MACHINE

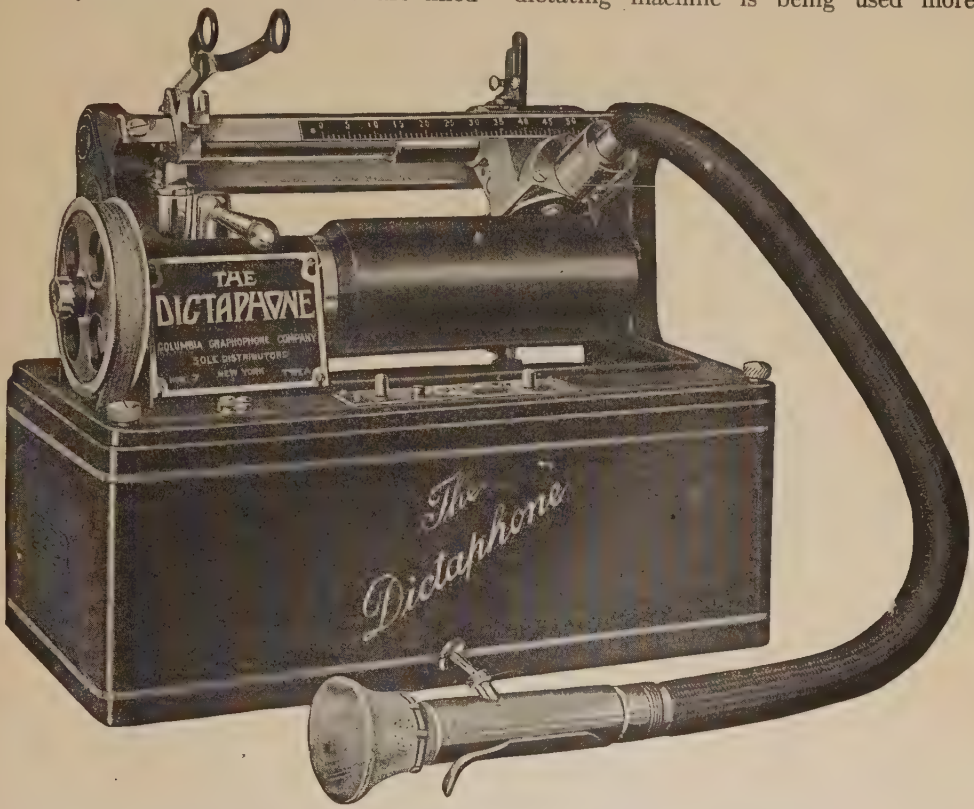


This tiny reproducer is the most important part of the machine. It translates the tiniest inequalities in the record into the wonderful tones we hear when listening to the record made by a great artist, or by a mighty orchestra. The disc record lies flat on the turntable, which is turned by the motor concealed in the box below.

By means of these movable leaves of wood, the volume of tone given out by the machine can be controlled. The files below keep the records safe from harm and convenient for use. The whole makes an attractive piece of furniture, as beautiful wood is used in its construction, and the finish is superb.

A Modern Talking Machine Which Faithfully Reproduces Conversation, Singing, or Orchestral Music.

beautiful music. A more serious use of the phonograph—as a record of the voices of distinguished men and women—has been made in many countries. The United States, Austria, England and France have each such collections for the benefit of the generations to come. By this means the artist is given immortality, and by this means our vaults are filled with a vast store of artistic and historical material.



This type of dictating machine is called the dictaphone. When one speaks into the tube in an ordinary tone of voice, the sound waves strike the diaphragm and the needle makes a delicate line in the wax of the cylinder as it revolves. The business man can dictate his letters even if his stenographer be out of the office. Pictures by courtesy of the Columbia Graphophone Company.

You can realize how great must be the sale of these records when you are told that great singers receive sometimes as much as $100,000 in a year for their part of the money received from the public, and many receive as much as $10,000. Some of the large manufacturers have their own orchestras or bands, so that they may always be ready to make records of new music when desired.

Few inventions have given so much pleasure to so many people. Not only can good music of every kind be heard in the smallest village, but music for gymnastics and dancing can be had at any time without an extra teacher to play for the drills, or without keeping one of the party at the piano, and the phonograph never tires.

The talking machine is not only a joy in the home, but is also useful in the business office as well. Some kind of a dictating machine is being used more and more, and saves much valuable time. We are showing you two pictures which will explain how it works better than we can do in words.

A wax cylinder is put on, and the machine is started. The man talks his letter into the tube which you see, and as he talks, everything he says is cut in a tiny line on the wax surface. The cylinder will hold perhaps a dozen letters before it is full. When the man is done he stops the machine.

When the typist is ready to write the letters, she can come to this same machine, push a little lever, put two tiny tubes in her ears, and the machine will

give back to her exactly what has been said. She then strikes the keys of her typewriter, and soon the letter is written. She can make the machine go as fast or as slow as she wishes, and can make it repeat any part as often as is necessary. In large offices, different machines are used for dictation and for reproducing.



Another inventor calls his machine the Ediphone. The employer has spoken into a receiver similar to the one shown elsewhere. The cylinder has been brought to this girl, who slips it on her machine, puts two small tubes into her ears, and starts the motor. The words of her employer are spoken distinctly but gently. The operator can vary the speed or have any portion of the dictation repeated.
Picture by courtesy of Thomas A. Edison, Inc.

You can see the many advantages of this machine. The stenographer may be busy or out at luncheon when the employer wishes to dictate, or the employer may think of a letter he wishes to write after every one else has gone home. He talks letters into a dictating machine, giving full directions, and even spelling strange words, and the typist can write them at her convenience. When a cylinder has been filled, and the letters have been written, a thin film of wax is shaved off the surface, and it is ready for use again. A cylinder can be shaved perhaps a hundred times.

The talking machine of to-day is distinctly of United States origin. It was first produced in the United States, by United States citizens and by United States manufacturers. They have been anxious to improve it in every way, and many devices have been invented, until now it seems as if there is little more to be done. There is not a part of the world where these machines, under some name or other, do not go.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5687.



Plowing in the New West.

THE PRAIRIE PROVINCES

CANADA, extending from the Atlantic to the Pacific, is more than equal in size to the United States and covers an area of 3,729,000 square miles—one-twelfth of the land surface of the earth. Of all the countries now in the stage of development, none attracts more attention than the Canadian Northwest. This vast inland empire stretches from the Rocky Mountains on the west to the wooded country of New Ontario on the east, and from the American boundary to a point yet to be determined on the north. The provinces which make up this area are vast plains, three times the size of the German Empire and five times larger than Great Britain and Ireland. The whole area is watered and drained by three great river systems. The rivers make one vast network of intersecting valleys. The provinces, Manitoba, Saskatchewan and Alberta, on account of the productiveness of their fertile prairies, are called the Granary of the Empire.

THE CLIMATE OF THE WESTERN PRAIRIES

Many people have wrong impressions regarding the climate of this western country. It will be interesting to know that Edmonton has as high an average temperature as St. Paul, fifteen hundred miles south. Further, Northern Michigan and Manitoba have similar temperatures, and as we go north and west the influence of the winds from the Pacific has a marked effect in modifying the climate. The Peace River valley, seven hundred miles north of the International boundary, has for the past twenty years grown a superior quality of wheat.

The soil of this great grain belt, although of the richest loam, would never have been so productive had it not been for the climate. The blessings of the climate are threefold. They consist in pure air, cool temperature and low precipitation. The pure air prevents too rapid decay of the vegetable matter in the soil and thus prevents a great amount of waste. This is one explanation of the great fertility of the soil. The cool temperature of the summer nights is responsible for the large relative yields of wheat. Raise the temperature of the summer days and nights and the yield of grain will be proportionately reduced. The cool temperature is one of the agricultural glories of the land. The rainfall

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is sufficient to grow the crops, and not heavy enough to destroy them when grown. Nearly every portion of the wheat belt has a rainfall of fifteen or twenty inches; enough to grow good crops on land that is properly cultivated.

PIONEER DAYS IN THE NEWEST WEST

Until the close of the last century, few men went into the Hudson's Bay Company's country except trappers and hunters. Many people, who are still young, remember when the land north of the Canadian Pacific Railway was considered the fur-trader's world, a world of adventure, of chance and of danger. Fearing the mystery and cold of the northland, the pioneers clung to the south and settled near the boundary line. This gave impulse to Regina, Moose Jaw, Calgary and Lethbridge. When it became known that the climate of the north was tempered by warm Chinook winds and that the soil was very fertile, the great wave of population broke its barriers and poured into the fertile valleys of the north.

From the point of development the West is only in its first infancy; out of 200,000,000 acres of wheat land, only 10,068,100 were under cultivation in 1916. Nearly all of this land has been cultivated for the first time since 1898, for before that time the wheat-growing possibilities were not recognized. In spite of this small acreage Canada is either fourth or fifth among the wheat-producing countries of the world. It does not require a great imagination to see Canada wresting from the United States her place as the world's greatest wheat-producing country. This will follow as soon as the remaining millions of Canada's fertile acres are brought under cultivation—a result which is only a matter of time and development.

THE RAILROADS THROUGH THE GREAT WEST

The trend of settlement follows the construction of railroads. At present, there are three great systems, the Canadian Pacific, the Grand Trunk Pacific and the Canadian Northern. Every year, these systems build hundreds of miles of new road, opening up to the settler tens of thousands of acres of new wheat lands. The time is not far distant when the whole wheat belt will be one great network of railroads.

MANITOBA, THE OLDEST PRAIRIE PROVINCE

Manitoba is the most easterly of the prairie provinces. The first settlement was made in 1811 at Fort Garry, by Lord Selkirk's colony of Scots. Colonization was slow and when Manitoba became a province in 1870, its population was only 1,700. In 1919 the population was estimated at 619,000.

The province has an area of 251,832 square miles with a considerable part in water surface, as Lakes Winnipeg, Manitoba and Winnepegosis are within its boundaries. Its eastern part is thickly wooded, sparsely settled, but rich in mineral wealth. The south, a level, fertile prairie, is thickly settled and has the appearance of the old established provinces of the East. The rich rolling country of the west and north is in places only sparsely settled. Of the arable land only about one sixth has been brought under cultivation.

All of the towns and most of the villages possess telephone and electric light plants. The province has an excellent public school system. The winters are cold but as the air is pure and dry a person does not mind them as much as those of the East.

"Manitoba hard" wheat is famous in the markets of Europe. The deep rich loam of the prairie produces the flinty kernel so much prized by millers. The wonderful thing about the soil is that its fertility lasts. There are old farms that have been cropped for over thirty years and still produce as regularly as the changing seasons twenty bushels per acre of the finest hard wheat. For many years Manitoba was treated exclusively as a wheat-growing country but now dairying and stock-raising are attracting much attention.

WINNIPEG, THE WONDER CITY OF THE WEST

No other city of its age and size has been advertised throughout the world so much as Winnipeg, the capital of Manitoba. The city has risen where once old Fort Garry slumbered. Scarcely more than a generation ago it was the great fur-trading post of the Hudson's Bay Company. Its population increased from 1,700 in 1870 to 186,000 in 1919, and during that period this small hamlet grew to be the third city in the Dominion in size and in volume of business.

THE LEGISLATIVE BUILDING AT WINNIPEG



For many years the Legislative Building of Manitoba was inadequate for the needs of the rapidly growing province but this deficiency is now, happily, a thing of the past. This magnificent building, recently completed at a cost of $5,000,000, will serve to house the various departments of the government for generations and is also dignified and impressive in its architecture. The figure on the dome is 250 feet from the ground.



This is an interior view of the building shown above. The stairway leading to the chamber of the Legislature is flanked by two enormous bison. It was a happy thought to use these animals which once roamed wild in the province of Manitoba. All of the Prairie Provinces now have government buildings which reflect credit upon them. The buildings of Alberta and Saskatchewan are shown elsewhere.

Photographs by British and Colonial Press, Ltd.

Winnipeg is the commercial centre of the West. As a wheat-shipping point it exceeds Chicago and Duluth. The city is the distributing centre for the wholesale and jobbing trade and every branch of business is represented. All the principal banks have branches and as a manufacturing city it ranks third in Canada. There are extensive stock-yards and immense abattoirs for slaughtering cattle for shipment to Europe and other markets. The yards of the Canadian Pacific Railway contain one hundred and twenty miles of track and are the largest in the world operated by one system. The city is the great railroad centre of the West. The three great railway systems radiate from it and connect the city with the East and the West, and it is the starting point of the new railway to Hudson Bay.

Winnipeg is the most cosmopolitan city in Canada. Less than one-half of the population are Canadians and over thirty different languages are spoken on the streets. Icelanders have taken the foremost place among the adopted peoples. They have forged to the front in colleges and the university, and in 1909, an Icelandic student was chosen as Rhodes scholar. The Scandinavians, industrious, honest and thrifty, have proven to be the best immigrants in Canada. The Galicians are the most troublesome of the foreigners.

The city has splendid educational facilities. The public school system embraces grammar, high and normal schools. Several colleges and the University of Manitoba give an excellent opportunity for the study of the higher branches. In order to assist in molding the foreigners into good citizens a very efficient night school system is maintained.

Brandon, a very attractive city of fifteen thousand people, is situated on the Canadian Pacific Railway, one hundred and thirty-three miles west of Winnipeg. The city is surrounded by a magnificent wheat country and is the distributing point for all kinds of goods. With large business blocks, fine churches, and residences it compares very favorably with Eastern cities.

THE BRACING CLIMATE OF THE PROVINCE OF SASKATCHEWAN

Saskatchewan, first constituted a province in 1905, is the central agricultural province of the West. It lies between the International boundary and 60th parallel of north latitude and between 102° and 110° longitude. This great rectangle contains 251,700 square miles, of which a large part is capable of producing the finest quality of wheat. The people of Saskatchewan boast that the whole population of the Dominion could live in comfort within the borders of the province.

The days in summer are long, bright and hot, but the nights are delightfully cool. The air is pure and dry, so a person does not mind the heat. The winter, which sets in about the first of December, continues without interruption until the end of March. The snowfall, however, is not nearly so heavy as it is in Montreal. June and July, the two great growing months, are the wettest of the year. During these months, the rainfall is just sufficient to furnish moisture for the growing crops. The province lies in the same latitude as the British Isles, Denmark, the Netherlands and Belgium. Edinburgh, Scotland, is farther north than any of the settled parts of Saskatchewan, and Petrograd, Russia, is in the same parallel of north latitude as the northern boundary of this prairie province.

Miles of railroad are every year being built through the province and thousands of acres are added to the cultivated area. Not only wheat but all kinds of grains are raised. Cattle-raising is an important industry and dairying is commencing to attract attention. There is an abundance of coal through the north and many other minerals have been discovered. The north has valuable forests and the rivers and streams are filled with all kinds of fish.

Regina (40,000), the capital, and Moose Jaw (24,000) are flourishing cities on the main line of the Canadian Pacific Railway. They are surrounded by a fine wheat country and are growing rapidly. Saskatoon (30,000), a city of not many years' growth, is on the main line of the Grand Trunk Pacific. It is the seat of the Provincial University and the chief distributing point for a large section of the country. Prince Albert (6,254), near the centre of the province, on the Saskatchewan River and a branch of the Grand Trunk Pacific, is a rapidly growing town. The province has a College of Agriculture and every effort is made to diffuse a knowledge of good farming.

CAPITOLS IN THE PRAIRIE PROVINCES



This is the building which houses the makers of laws for Saskatchewan. It stands in the city of Regina, capital of the province, which is a distributing centre for the Middle West, especially for farm implements and machinery. The city has important manufacturing plants for a variety of products, and owns fine park lands. The population is over 40,000.



At Edmonton, the capital of Alberta, you will see this government building where the legislature of the province meets. Edmonton, like Regina, has flour mills, foundries and a number of other factories; and both cities own their street railways, electric light and water plants. The population of Edmonton is estimated to be about 65,000. The vicinity has large supplies of coal and natural gas, is in rich agricultural country and is important for fur-trading.

ALBERTA, THE SISTER PROVINCE OF SASKATCHEWAN

Alberta, first made a province in 1905, is larger than either Germany or France. The area is 255,285 square miles and the population 588,000 in 1919. The province lies between the International boundary and the 60th parallel, while on the east and the west it is bounded by Saskatchewan and British Columbia.

Southern Alberta is an ideal ranching country. It was the winter home of the buffalo and is now the region of large ranches, though as population increases they are being broken up into farms. Around Calgary the rainfall is not sufficient for regular crops; it is an open, treeless prairie covered with wild grasses. At present much of this land is irrigated and bountiful crops are produced. The southeastern part of the province is valuable wheat land.

The climate is always dry in winter. The snowfall is light and lies dry as sand under the feet. The air is clear and the sun is bright throughout the winter days. Spring is early; it opens at Edmonton about the same time as it does at Toronto, Ontario. In summer, the days are hot and the nights are always cool.

Horses and cattle run out all winter, unhoused and unfed. In the East, the grass, if left uncut, seeds, then decays and becomes worthless in the rain; but in the Northwest, the prairie grass is self-cured by the dry weather of the fall and is just as good as standing hay. The winds blow off the light falls of snow and uncover the food for horses and cattle. This makes Alberta the ideal country for ranching.

The climate is greatly influenced by the Chinook winds. These are warm, dry winds which blow with considerable force from time to time through the winter. They evaporate every vestige of snow without leaving a trace of dampness on the smooth surface of a stone. Their influence is felt as far east as Regina and far to the north but is most pronounced in Alberta.

THE NATURAL RESOURCES AND PROGRESSIVE CITIES OF ALBERTA

The northwest corner is true forest land while through the centre and parts of the north there are tracts of dense woods. A large part of the province is underlaid by coal beds, yielding coal in quality from lignite to anthracite. Gold in paying quantities is found in the northern part and also galena and silver. Natural gas and petroleum have been discovered in many places, and other minerals will likely be found.

Calgary (80,000), a well-built city, and the commercial metropolis of the middle west, is situated on the main line of the Canadian Pacific Railway. The Rocky Mountains are visible on the western horizon. The city is a great manufacturing place as well as the distributing point for a large area of country.

Edmonton (65,000), the capital of the province, is situated on the Saskatchewan River. This city, which in 1901 was a trading post of the Hudson's Bay Company, is now a large manufacturing centre. The Grand Trunk Pacific Railway passes through it, and it has become the chief distributing centre for a large, fertile country. Across the river is Strathcona, a flourishing city and the seat of the Provincial University.

Medicine Hat (11,000) is located to the east of Calgary on the Canadian Pacific Railway. It has natural gas and is rapidly becoming a great manufacturing town. Lethbridge is the centre of an extensive coal-mining district. The largest coal mines in Western Canada are located here. Added to these cities, the province has more than a score of new towns varying in size from fifteen hundred to two thousand people or more. A few years ago the sites of many of these towns were virgin prairies.

These three prairie provinces form the wheat belt. This vast empire contains millions of acres of the finest agricultural and grazing lands and only a small per cent has as yet been brought under cultivation. The development of these provinces is one of the remarkable events of the twentieth century. With such undeveloped resources is it a wonder that no other country is receiving such attention? Settlers from all parts of the world have come to till these virgin prairies, and over half a million of immigrants from the United States have crossed the line into Canada. Towns have sprung up in a night and in a year have become full fledged cities. It seems, the prophecy that the twentieth century belongs to Canada will be fulfilled.

THE NEXT STORY OF CANADA IS IN THIS VOLUME.

TWO THRIVING WESTERN CITIES



This is part of a beautiful park which lies close to the business section of Calgary and ensures a breathing space to that part of the city. The statue in the centre of the picture was erected in memory of the soldiers from the city who fell in the Boer War, and represents a trooper in the Strathcona Horse. The statue was made by Louis Philippe Hebert, who also made the statue of Maisonneuve in Montreal.



Picture, British and Colonial Press, Ltd.

Brandon, Manitoba, is a thriving little city on the Assiniboine River with broad well-paved streets, and attractive homes. It is not only a business but an educational centre, for a prosperous farming district. The manufactures are diversified, the railway facilities are excellent and the future growth of the city seems assured. It is the seat of Brandon College, a Normal School, and an Indian Industrial School.

THE CANADIAN NORTHERN ELEVATOR AT PORT ARTHUR, ONTARIO



This elevator holds 10,000,000 bushels of grain and each one of the huge, cylindrical, concrete bins holds several thousand bushels. It is called an elevator because the wheat is elevated, or raised, to the top of the building before it is dropped into the bins. Wheat is stored here until it is sold. In the picture you see where the cars are run into the elevator. The grain is taken from the cars to the top of the building in hoppers and there weighed and distributed to the bins. Six hundred cars, averaging 1,000 bushels each, can be unloaded in one day. When the wheat is shipped, it is taken from the bottom of the bin, elevated to the top of the building, weighed, and spouted into the hold of a lake vessel. In this way 100,000 bushels can be unloaded from the elevator in one day.

5614

WHAT THIS STORY TELLS US

THE life of Phillip Nolan is told so simply and so well that many have believed that it is a true story. While no such punishment was ever given to an American officer, Reverend Edward Everett Hale, the author, has truthfully described the feelings of a man cut off from home and country by his own act. The story was written in the dark days of 1863, when there were many disloyal persons in the North, and it was written as a warning. The tale is told by a very old naval officer, who is recalling events that happened long before, when he was a very young man. Every boy and girl should read the little book.

THE MAN WITHOUT A COUNTRY

CONTINUED FROM 5471

PHILIP NOLAN was as fine a young officer as there was in the "Legion of the West," as the Western division of our army used to be called. He was stationed for a time at a fort on the Mississippi. One day there arrived at the fort a fascinating stranger of courtly manners and handsome figure. It was Aaron Burr, whose term as Vice-president of the United States had just expired. Burr noticed Nolan, talked to him, walked with him, and, in short, fascinated the young officer. When he went on his way, the joy seemed to have gone out of life for Nolan. The soldier's life now became tame and wearisome. Sometimes he wrote to his idol, long, high-worded, stilted letters, written and rewritten and copied. But never a line did he have in reply, and the other young officers in the garrison laughed at the time that he spent in this way.

But one day Nolan had his revenge. Burr came down the river again. Rumor said he had an army behind him, and an empire before him. What he meant to do, we do not know, but probably he was bent upon conquering Mexico, and setting up a state with himself as chief. It was a great day to poor Nolan. Burr had not been at the fort an hour before he sent for him. That evening he asked Nolan to take him out in his skiff—to show him a canebrake or a cottonwood tree, as he said—really it was to enlist him in his cause. And he succeeded. Deceived by his charm and led away by his false promises, Nolan swore that when the time came he would obey any orders and march anywhere. What Burr meant to do can never be known; President Jefferson was informed of his schemes and had him arrested. A long and exciting trial for treason followed at Richmond, and among the officers who were to be tried by court martial was little Nolan. It was charged that he was sick of the service, had been willing to be false to it, and would have done anything for the cause of Aaron Burr.

The trials dragged on. The officers of higher rank escaped, but Nolan was found guilty, and he was guilty. At the close of his trial, the president of the court asked him whether he wished to say anything to show he had been faithful to the United States. Nolan, sick at heart and bewildered at the downfall of his hero, cried out in a fit of frenzy, "Damn the United States! I wish I may never hear of the United States again!" He did not know how the words shocked old Colonel Morgan, who was presiding. Half the officers who sat in it had served through the Revolution; and their lives had been risked for the very thing which in his madness he cursed so recklessly. He, on the contrary, had grown up in the West of those days, on the edge of the wilderness, with Frenchmen and Spaniards and occasional Englishmen. In

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a word, to him the United States was scarcely a reality. Yet he had been fed by the United States all the years he had been in the army. He had sworn to be true to the United States. And still he damned his country and wished he might never hear her name again.

He never heard her name but once again. From that moment, September 23, 1807, till the day he died, May 11, 1863, he never heard that sacred name again. For that half century, and more, he was a man without a country. Old Colonel Morgan called the court into his private room, and returned in fifteen minutes, with a face like a sheet, to say:

"Prisoner, hear the sentence of the court! The court decides, subject to the approval of the President, that you never hear the name of the United States again."

Nolan laughed. No one else laughed, for the Colonel was too solemn, and the whole room was hushed to a death-like stillness. Even Nolan lost his swagger in a moment. Colonel Morgan added:

"Mr. Marshal, take the prisoner to Orleans in an armed boat, and deliver him to the naval commander there.

"Mr. Marshal," continued the Colonel, "see that no one mentions the United States to the prisoner. Make my respects to Lieutenant Mitchell at Orleans, and request him to order that no one shall mention the United States to the prisoner while he is on board ship. You will receive your written orders from the officer on duty here this evening. The court is adjourned without a day."

Nolan was taken on the Nautilus from New Orleans to the North Atlantic coast, but not allowed to land. Then the Secretary of the Navy put him on board a government vessel bound on a long cruise, giving instructions to the commander of the ship. Nolan was to be confined only so closely that he could not escape; and to be provided with such quarters, rations and clothing as would be proper for an officer of his late rank. No insults were to be offered him, nor was he ever to be reminded unnecessarily that he was a prisoner. But under no circumstances was he ever to hear of his country.

At first Nolan considered his imprisonment a jest, and pretended that he was enjoying the voyage, but gradually he changed his tone. He was not lonely on the ship, for he was allowed to talk with the officers as much as he and they liked. But no group ever liked to have him always, because his presence cut off all talk of home, or of the prospect of return, of politics or letters, of peace or of war,—cut off more than half the talk men like to have at sea. The captain always asked him to dinner on Monday. Every mess in its turn took up the invitation, and he was at different messes more or less often. His breakfast he ate in his own stateroom,—he always had a stateroom,—which was where a sentinel or somebody on watch could see the door. Sometimes when the sailors had any special jollifications, they were permitted to invite "Plain Buttons," as they called him. Then Nolan was sent with some officer, and the men were forbidden to speak of home while he was there. They called him "Plain Buttons" because, while he always chose to wear a regulation army uniform, he was not permitted to wear the army button, for the reason that it bore either the initials or the insignia of the country he had disowned.

He was almost never permitted to go on shore, even though the vessel lay in port for months, and time hung heavy; but everybody was allowed to lend him books, if they were not published in America, and said nothing about the United States. He had the foreign papers that came to the ship, sooner or later; but somebody had to go over them first and cut out any stray paragraph or advertisement that spoke of America. Often a hole in the article he was reading showed that something about the United States was on the other side.

After touching at the Cape of Good Hope, they left for a long cruise in the Indian Ocean. One of the officers got some English books from the English fleet which they met at the Cape, and among the number was Scott's Lay of the Last Minstrel which had been recently published. One afternoon, Nolan joined a circle where some of the officers were reading aloud. In his turn he took the book and read it to the others. He read very well, and continued steadily through the fifth canto, stopped a minute and drank something and then began, without a thought of what was coming:

"Breathes there a man with soul so dead,
Who never to himself hath said—
'This is my own, my native land;'"

Then they all saw something was wrong; he turned a little pale, but plunged on:

"Whose heart hath ne'er within him burned,
As home his footsteps he hath turned
From wandering on a foreign strand?
If such there breathe, go, mark him well!"

By this time the men were all beside themselves,—was there no way to make him turn over two pages? He did not seem to have quite presence of mind enough for that himself, but coloring crimson, staggered on:

"For him no minstrel raptures swell,
High though his titles, proud his name,
Boundless his wealth as wish can claim,
Despite those titles, power, and pelf,
The wretch, concentred all in self—"

and here the poor fellow choked, could not go on, but started up, flung the book into the sea, and vanished into his stateroom, where he stayed for the next two months without seeing a soul, save the men who brought him food. After this he grew more shy, very seldom spoke, unless he was spoken to, except to a very few friends, while his look was the nervous, tired one of a heart-wounded man.

The long voyage drew to a close; the vessel made one of the Windward Islands, and lay there for nearly a week. The crew all wondered what the delay could mean. One day the Warren came to the same place. The new ship sent letters and papers to the homeward-bound men, told them they were outward bound, perhaps to the Mediterranean, and took back poor Nolan to try his second cruise. He looked very blank when he was told to get ready. He had thought—though no one had spoken of it—that he was going home, but this was a certain sign that there was no going home for him, even to a prison.

This was the first of twenty transfers, which kept him all his life away from the country he had hoped he might never hear of again. On one of his trips, when they were in the Bay of Naples, the officers gave a great ball aboard the ship. They wished to use Nolan's stateroom for something, but disliked to do it without asking him to the ball. The captain said they might ask him, if they would see that he did not talk with the wrong people, who would give him news of home. So the dance went on, and different officers relieved one another in standing and talking with Nolan so as to be sure that nobody else spoke to him. As the hours passed, Nolan and they grew more at ease, so much so that it seemed quite natural for him to bow to Mrs. Graff, a celebrated beauty, and ask her for the honor of a dance.

Nolan thought he had found his chance. He had known her at Philadelphia and had met her at other places. They were in a country dance, and so for a while he began with her travels, and Europe, and Vesuvius, and the French; and then, when they had worked down, and had that long talking-time at the bottom of the set, he said boldly,—though he was rather pale:

"And what do you hear from home, Mrs. Graff?" And that splendid creature looked through him. "Home! Mr. Nolan! I thought you were the man who never wanted to hear of home again!" And she walked away to join her husband, and left poor Nolan alone, as he always was. He did not dance again.

During the War of 1812, the vessel on which he was living met a British ship. A shot entered a port and took down the officer of the gun himself, and several of the gun's crew. As the men who were not killed picked themselves up, Nolan appeared in his shirt-sleeves, with the rammer in his hand, finished loading the gun with his own hands, aimed it, and bade the men fire. And there he stayed, captain of the gun, till the enemy struck. The commander walked forward to encourage the men, and Nolan, touching his hat, said, "I am showing them how we do this in the artillery, sir." And the commander said, "I see you do, and I thank you, sir; and I shall never forget this day, sir, and you never shall, sir."

The commander mentioned him in his report. He even wrote a special letter to the Secretary of War, asking that Nolan might be pardoned; but nothing came of it, and the prisoner continued his weary life in almost every sea and yet almost never on land. He was not idle, but occupied his time very methodically, reading just five hours a day, and for two hours writing in his note-books on what he had read. Then for amusement he studied Natural History for two hours a day more. The men used to bring him birds and fish, but on a long cruise he had to satisfy himself with centipedes, cock-

roaches, mosquitoes and the like. These nine hours made Nolan's regular daily "occupation." The rest of the time he talked or walked. Till he grew very old, he went aloft a great deal, and always kept up his exercise. He was never ill himself, but if any other man was ill, he was the kindest nurse in the world, and if anybody was sick or died, or if the captain wanted him on any other occasion, he was always ready to read prayers. He read beautifully.

On one occasion his ship overhauled a dirty little schooner which had slaves on board. The officers freed the negroes, but were in need of some one who could speak Portuguese and thus quiet the poor wretches. Nolan said he could interpret and the captain fitted out a boat and sent him over.

"Tell them they are free," said the officer in charge, "and tell them that these rascals are to be hanged as soon as we can get rope enough."

Nolan explained and the negroes went nearly wild with delight, kissing his feet, and worshipping the other officer as the god of the occasion.

"Tell them," said Vaughan, well pleased, "that I will take them all to Cape Palmas."

This did not answer so well, and they all clamored eagerly for something else. Vaughan was rather disappointed and asked Nolan eagerly what they said. The drops stood on poor Nolan's white forehead, as he hushed the men down and said:

"He says, 'Not Palmas.' He says, 'Take us home; take us to our own country; take us to our own house; take us to our own children and our own women.' He says he has an old father and mother who will die if they do not see him. And this one says he left his people all sick and paddled down to Fernando to beg the white doctor to come and help them, and that these devils caught him in the bay just in sight of home, and that he has never seen anybody from home since then. And this one says," choked out Nolan, "that he has not heard a word from his home in six months." Vaughan himself grew gray as Nolan struggled through this speech. Even the negroes stopped howling as they saw Nolan's agony and Vaughan's almost equal agony of pity. As quick as he could get words the commander said:

"Tell them yes, yes, yes; tell them they shall go to the Mountains of the Moon, if they will. If I sail the schooner through the Great White Desert, they shall go home!" After some fashion Nolan said this to the men, and then, for he could not stand any more, went back to the ship. As he lay back in the boat he said to a young midshipman, who accompanied him, "Youngster, let that show you what it is to be without a family, without a home, and without a country, and if ever you are tempted to say a word or do a thing that shall put a bar between you and your family, your home and your country, pray God in His mercy to take you that instant home to His Heaven. As for your country, boy," and the words rattled in his throat, "and for that flag," and he pointed to the ship, "never dream a dream but of serving her as she bids you, though the service carry you through a thousand hells. No matter what happens to you, no matter who flatters you or who abuses you, never look at another flag, never let a night pass but you pray God to bless that flag."

So poor Philip Nolan had his wish fulfilled. He repented of his folly, and then, like a man, submitted to the fate he had asked for. He never intentionally added to the difficulty of those who had him in charge. As the years went on he aged very fast, as well he might indeed, but he continued to be still the same gentle, uncomplaining, silent sufferer, bearing as best he could his self-appointed punishment.

At last he fell ill, and allowed the doctor to come and see him as he lay there,—the first time that the doctor had been in the stateroom,—and then sent for one of the officers who was his friend. Danforth quickly obeyed the summons, and found the old man in his berth, smiling pleasantly but looking very frail. He had made a little shrine of the cabin he was lying in. The Stars and Stripes were triced up above and around a picture of Washington, and he had painted a majestic eagle, with lightnings blazing from his beak, and his foot just clasping the whole globe which his wings overshadowed. Seeing the young man's glance, Nolan said with a sad smile, "Here, you see, I have a country!" And he pointed to the foot of his bed, where was a great map of the United States as he had drawn it from memory, and which he had to look upon

as he lay. Quaint, queer old names were on it in large letters,—"Indian country," "Mississippi Territory," and on the Pacific shore nothing.

"Oh, Danforth," he said, "I know I am dying. I cannot get home. Surely you will tell me something now? Stop! Stop! Do not speak till I say what I am sure you know, that there is not in this ship, that there is not in America—God bless her!—a more loyal man than I. There cannot be a man who loves the old flag as I do, or prays for it as I do, or hopes for it as I do. There are thirty-four stars in it now, Danforth. I thank God for that, though I do not know what their names are. There has never been one taken away; I thank God for that. But tell me, tell me something,—tell me everything, Danforth, before I die!"

And Danforth said, "Mr. Nolan, I will tell you everything you ask about. Only, where shall I begin?"

A blessed smile crept over his white face, and he pressed the officer's hand and said, "God bless you. Tell me their names," and pointed to the stars on the flag. "The last I know is Ohio. My father lived in Kentucky. But I have guessed Michigan and Indiana, and Mississippi—that was where Fort Adams was—they make twenty. But where are your other fourteen? You have not cut up any of the old ones, I hope."

So Danforth told him the names, and drew them in on the beautiful map, and in one hour tried to tell the sick man the history of half a century. He spoke of travel and the means of it; of steamboats and railroads and telegraphs; of inventions and books and literature; of the colleges and West Point and the Naval Academy; who was President and how Washington had grown. Everything that he could think of that would show the grandeur of his country and its prosperity he told him, but he had not the heart to tell him of the Civil War.

Nolan asked about all his old companions in arms and the naval officers he had known. He asked about Burr with some emotion, for his admiration had changed into passionate dislike, but said in a moment: "God forgive me, for I am sure I forgive him." He inquired about the commander of the Western army in which he had served so long before, and wished to know if President Lincoln was the son of General Benjamin Lincoln of the Revolution. When told that the President had come up from the ranks he was pleased, for he had been afraid that the office would be confined to a few families, as it had been in the early days. His curiosity could not be satisfied.

Danforth told him more. He spoke of the new Smithsonian Institution, of the new Capital, of how California and Oregon came into the Union. Nolan had suspected that there were states on the Pacific coast, for he had not been allowed to go ashore there.

And Nolan drank it in and enjoyed it as he had enjoyed nothing for fifty years. He grew more and more silent, and Danforth gave him a glass of water, but he just wet his lips, and told him not to go away. Then he asked for the Book of Public Prayer, which lay beyond him, saying with a smile that it would open at the right place, and so it did. There was his double red mark down the page by the Thanksgiving prayer for the country. And he turned to the end of the same book and showed his friend the prayer for the President and the country. "Danforth," he said, "I have repeated those prayers night and morning, it is now fifty-five years." And then he said he would go to sleep. He bent the officer down over him, and kissed him; and he said, "Look in my Bible, Danforth, when I am gone." And then he was left alone. The officer thought that he was only tired, and that he would recover after a little nap. But Nolan's feeling that his end was coming, was correct.

In an hour, when the doctor went in, he found Nolan had breathed his life away with a smile. They looked in his Bible, and there was a slip of paper at the place where he had marked the text: "They desire a country, even a heavenly, wherefore God is not ashamed to be called their God, for He hath prepared for them a city." On the paper he had written:

"Bury me in the sea: it has been my home, and I love it. But will not some one set up a stone for my memory at Fort Adams or at Orleans? Say on it:

IN MEMORY OF
PHILIP NOLAN
LIEUTENANT IN THE ARMY OF THE UNITED STATES
HE LOVED HIS COUNTRY AS NO OTHER MAN HAS LOVED HER; BUT NO MAN DESERVED LESS AT HER HANDS."

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5831.

JACK AT HOME IN HIS WONDERFUL HOUSE



This is a picture of Jack in his study at the top of the wonderful house which builds itself, and from this most wonderful room run the telephones and telegraphs by which Jack controls all his affairs.

THE MOST MYSTERIOUS THING IN THE WORLD

WE have taken up in turn the different parts of the body and their functions. Now we shall glance at the body as a whole at work. This fanciful comparison may help us to understand better what we have already read. This house of Jack's, "a house not made with hands," is by far the most important and wonderful and complicated and mysterious thing in the whole world. It is the most important because the thinking part of men and women cannot exist at all in this world except in such houses; the most wonderful, because it daily does with ease a thousand things which cannot be done outside it; the most complicated, because the tiniest cell which goes to make it up is itself as complicated as a great city; and the most mysterious, because it is inhabited by Jack, grows from what cannot be seen at all, and can become the parent of other houses like it. So we must try to learn what this house is, what it does, and where it comes from.

THE HOUSE THAT JACK HAS

CONTINUED FROM 5442



ALL except the simplest houses are built in stories, and so is Jack's. The house itself, commonly called Jack's trunk and head, simply consists of three stories, but it is placed upon two movable stilts, so that Jack can walk about, and he has two arms with which he can help himself to what he likes when he is walking about. These four limbs are very important, because Jack's house is always wearing away and needing new material to keep it up, and, as this material does not exist everywhere, Jack must be able to move about, and also to bring the new materials he finds to his house.

So our concern really is with the three stories that make Jack's house about which we shall now tell.

But before we study them we must look at its outer and inner walls. The outer wall is made of skin, which is found nowhere else—not inside the mouth or nose, for instance. This wall is remarkable in many ways. House-painting is never required, for the wall is ever renewing its surface from within, and all Jack requires to do is to wash away the dusty outside every day. To be sure it grows somewhat dull with age and exposure to rough weather. As Jack's house is always moving, — for, waking or sleeping, he must breathe—its outer wall requires to be elastic. And so it is; nothing so perfect in the way of elasticity has ever been invented. But, indeed, Jack's house has hundreds of features which would make the fortune of anyone who could imitate them artificially. It is, of course, necessary that the walls of Jack's house should be watertight. And so they are; they never let in the rain, and they may even be immersed in water altogether for as long as Jack likes, but not a drop of water will leak through from the outside.

But this is all the more remarkable because Jack uses the outer wall of his house not only as a wall and a waterproof, but also as part of his very perfect and complicated system of drainage. It need hardly be said that water must be furnished to every part of Jack's house, for, indeed, it consists of water to the extent of something like three-fourths of its whole substance. As in all good houses, there must be an efficient system of drainage for the water to escape by, and this is done in several ways, as the variety of uses for water in Jack's houses is considerable. It is especially interesting that he should use his waterproof wall to let out a quantity of used water every day.

Also Jack uses his wall as one means of keeping his house equally warm by day or night in summer

or in winter—which he manages to do so wonderfully that nobody can explain it. But it is true nevertheless that somehow this wall lets out varying amounts of heat for his convenience. Lastly, all over this wall are stationed very close together countless millions of sentinels, called the never-endings.

The inside walls mostly consist of bones, and, by an excellent arrangement, the walls of the rooms of Jack's house are jointed on each other, so that the house can change its shape, or even move about as a whole, whenever it pleases. This moving is done by Jack's hundreds of servants, who lie along the walls, holding one wall with one hand and one with the other, and pulling them backwards and forwards as Jack desires. Jack believes in economy, however, and he has a remarkable arrangement by which he employs all these servants of his as fireplaces in addition to their other duties.

In somewhat the same way Jack is not content to use his inner walls merely as walls, for they are all hollow, and inside them, all the time, are being made millions of millions of tiny porters and policemen, called the red and white cells of the blood.

The busy workers in the basement of Jack's house

And now we can begin to study the three floors of which Jack's house consists. They are the basement, the middle story, and the top story, or watch-tower; these are commonly called the abdomen, the chest, and the head. A dog or a horse has a wonderful house, which is very like Jack's in many ways, but these animals have their three stories one in front of the other instead of one above the other. Jack's house is built in what is called the "erect attitude," and this enables him to use the top story, or head, as a watch-tower, far better than any of the animals can do.

The basement of Jack's house is, as we should expect, the least attractive story, but it is the largest, and Jack's house could by no means do without it. Its chief concern is with the receiving and storage, and breaking up and sending away to be burned, of the fuel, or food, with which Jack's house is kept warm, and here its various engines and pumps are run. This is a business which cannot take a holiday, for though Jack's pumps and engines are commonly run at something like half-speed during the night, they are never allowed to stop altogether so long as Jack remains in his house, and if they did the house would at once become useless for living purposes and begin to crumble. So we can understand at once that the whole business of taking in coal, or fuel, and dealing with it, is very important. Jack cannot store very much fuel at any one time, but he can always have a supply of one kind, called fat, on the premises for an emergency, and one of the favorite places for keeping it is just inside the front wall of the basement.

How fresh air is driven through the house

The middle story of Jack's house consists, above all, of the arrangements for ventilation. Ordinary houses may or may not be ventilated, and very few of them are specially built with this consideration in view; but if Jack's house were not ventilated it would fall to pieces and become uninhabitable, and thus we find that its middle story is practically filled with the two lungs, which take the fresh air in and give the spoiled air out, and with the great central pump, or heart, which drives the fresh air through the house by means of a system of tubes called blood-vessels, which go everywhere. The lungs are really bellows, and the heart, as we have said, is a pump. The essence of bellows is that they are expanded by some means and the air rushes into them. The bellows of Jack's house are expanded by the muscles, or servants, lying against and holding on to the walls called ribs, and thus enlarging this part of Jack's house every time he breathes. The central pump, or heart, is a true pump, or combination of pumps, fitted with four perfect valves which can never shut down.

Waiters, elevators and watchmen

The blood is so marvelous a thing that we can compare it with nothing else in the world. It is a complete ventilating system, carrying fresh air in and foul air out; a complete water-supply; a complete service of waiters and elevators, carrying food to all parts of the house; a complete drainage system, carrying rubbish and litter away from the various rooms and getting rid of it;

a day and night patrol of watchmen on the look-out for burglars, such as the microbes of consumption, which frequently attempt to make an entry through the ventilating shafts, or sometimes even by the front door; and a druggist's shop, containing large numbers of antidotes to most of the common poisons.

THE BUSY SENTINELS ON THE TOP STORY

Lastly, there is Jack's top story, where he himself lives. As this is the master's apartment, situated above the others, very perfect arrangements have, of course, to be made for sending everything necessary up to it, and if we put our fingers on either side of Jack's neck we can feel the two great arteries that are always sending food and water and air and so forth up to Jack. At night Jack finds that the best way of resting all his many servants—though they never rest entirely—is to lay his house down on its side, or on its back, though that is not so good. They can in this way prepare for another day's work.

The top story is supplied with various windows and sentinels, especially the eyes, which, being much farther sighted than the sentinels in the skin, are naturally placed in the watch-tower. Other kinds of sentinels are the ears, the nose —which is also an elaborate filter for the ventilating shaft—and the tongue, or hall-porter, who closely examines everything which is admitted to the house by the front door in order to find out whether or not it has any right to come in.

JACK'S TELEPHONE

Each sentinel, like those found everywhere in the outer wall of the house, has a perfect telephone connection with Jack's study, so that orders can instantly be given in accordance with what they report.

Jack himself lives in the study, which is in the top part of his brain—where the telephone exchange is—and he is to be found behind the various windows and sentinels. His brain is itself the topmost part, or level, of what is called his nervous system, which is very much like an elaborate arrangement of electric bells or batteries, speaking-tubes, telegraph and telephone wires. This contrivance goes everywhere, but it is interesting to know that, like Jack's house itself, it is made of three different levels, or, we may say, has three exchanges, one above the other.

The top part of the brain is the highest exchange and is master of the other two, and there Jack lives. But the other two are very important, and the lowest, though the others are masters of it to some extent, is yet entirely responsible for what are, on the whole, the most important services of Jack's house, and will not obey even Jack himself for more than a moment. This lowest exchange is also the oldest in the history of Jack's house, and is the least easily upset if any enemies get into the house—such as microbes, or alcohol, or the poisons produced by hard work. It can go on, after a fashion, when the others have stopped working. The lowest exchange controls the bellows and pump in Jack's middle story, and its importance is due to the fact that without their ceaseless action Jack's house would be no longer habitable. You can see why it will not even obey Jack himself. If this exchange, found in a tiny place called the "bulb," be destroyed by any accident, the ventilation of Jack's house instantly ceases, the whole structure of the house collapses, and Jack, as doctors would say, "dies of asphyxia."

THE GREAT RECORD OFFICE OF JACK'S HOUSE

The middle exchange, or level, of Jack's nervous system lies at the base of the brain, and is principally concerned with receiving messages of all kinds from the sentries in the skin, and from the great sentinels which are stationed in the top story. These messages do not arrive in any complete form, but only in fragments, for each sentinel can report only what he notices. It is the business of the middle exchange to take these reports and piece together all the tiny scraps of information sent in to it piecemeal so as to make good sense of them.

The exchange can only do this by the aid of past messages, and thus the middle exchange is a great record office, not merely receiving and piecing together the messages always coming in, but comparing them with its records; and then, when they have all been collected together, corrected, and interpreted,

it sends them up by its own wires, or nerves, to the top telephone exchange.

Jack's study, of which the proper name is the neo-pallium, or new mantle, is a grey fold of brain spread out over the top of the whole, and it is quite new in the history of living beings, or, at any rate, it is not known in the earliest creatures, and is as new in the world as mankind is. This part of the brain is worthy of Jack, and is, indeed, by far the most wonderful part of his wonderful house. It contains many millions of nerve-cells, which are a curious kind of combination of electric batteries and pigeon-holes. From and to each of them there run nerves, or wires, and between all these, and between them and the lower exchanges, these wires also run.

How the wonderful house that Jack has rebuilds itself

But now we must come to realize that the architecture of Jack's house, though there can be no end to the study of it, is nothing more than a guide to what this incomparable house does. Every moment it is wasting away; indeed, unless it does so it is of no use. Thus, if it is to stand, it must repair itself, and this it does by daily building up into its substance certain parts of Jack's food, while the rest is burned as fuel for the heating apparatus and for the machinery that moves the walls. Nothing which has ever been made by mankind has this wonderful power, which is displayed by living things and is the mark of their life.

It is especially noteworthy that Jack keeps a large number of chemists constantly at work in his house, and they are occupied in turning the raw material, which is admitted at the front door by the hall-porter, into the special kinds of stuff of which Jack's house is made. These chemists far surpass any chemists that are known elsewhere. They can build up complicated materials from very simple ones, and this they accomplish without noise or explosions or great heat or waste. It is also very noteworthy that the furnaces, or muscles, can burn their fuel, such as sugar, at the temperature of Jack's house, though the most skilful chemists cannot get sugar to burn at anything like that temperature outside such houses as Jack's.

The marvelous machines which no man can make

Furthermore, there are no machines so clever as Jack's muscles anywhere else. The great business of an engineer is to get a machine which will turn as much as possible of the fuel it consumes into useful work. If a machine can turn ten or fifteen per cent of its fuel into useful work it is called highly efficient and economical. The rest is waste. Most machines do very much less than this. But Jack's muscles not only turn a higher proportion of their fuel into power than any machine made by man can, they also turn the whole of what is left of the fuel into heat to keep Jack's house warm. There is thus no waste at all; and these machines are therefore much superior to all others, not to mention the trifling fact that they repair themselves from moment to moment—as if one could send a stream of steel through a motor-car by which it made good its wear and tear as it went along the road!

But only the least of the wonders has yet been told. Jack was once a baby, and his house was a baby's house. Yet it grew into Jack's house, and it is still growing. Now, it is wonderful enough to have a house that can maintain itself in repair, but what can you say about a cottage that can grow into a mansion? The truth is that there is nothing to be found in fairy tales which equals Jack's house. It is a magic house, surpassing all knowledge and all imagination, not only in the marvelous intricacy of its architecture and the unique character of its materials, not only in its extraordinary powers of feeling and doing and thinking, but also in its amazing history.

The holy house in which God lives

We have not yet considered the most solemn thing of all, that Jack's house is also the House of God. Think of the words of St. Paul, "What! Know ye not that your body is the temple of the Holy Ghost?"

Jack's house is therefore a holy place, to be cared for, kept clean and pure, and held in honor because of Him who dwells therein. Those who remember this solemn truth will treat their bodies with careful respect, avoid habits which injure them or do them dishonor, and seek to protect the bodies of others.

THE NEXT STORY OF JACK'S HOUSE IS ON PAGE 5902.



A WEDDING IN THE HILLS OF SCOTLAND DURING THE PERSECUTION OF THE COVENANTERS

BRAVE GRIZEL HUME

CONTINUED FROM 5394



WE may search all history without finding a more charming story of heroism and devotion than that of Grizel Hume. Most of us might hope to be heroes or heroines for the time being in some desperate situation, but Grizel was a heroine all her life. She was born at Redbraes Castle, Berwickshire, on Christmas Day, 1665, and was the daughter of Sir Patrick Hume, or Home; we are not certain now about the spelling. There were eighteen children in the family—and all of them, save two, were younger than herself. She, however, was the special favorite of her father. She showed such extraordinary intelligence that he entrusted her, when she was quite a tiny girl, with secrets which involved his very life, as well as the fortunes of his family.

For we must remember that at this time Scotland, and a great part of England, were greatly excited over what is known as the Covenant. After the Reformation, religious men in Scotland bound themselves by this Covenant to do all in their power to oppose the Pope, and to foster and extend the Protestant faith. When Scotland joined England against Charles I., the Covenant was agreed to by both nations; and when Charles II., after his banishment, was allowed to go back into England to take the throne, he signed the Covenant on landing, and signed it again on being crowned. As soon as he had gained the throne, however, this dishonest king declared the Covenant illegal, and forbade people, on pain of death, to be bound by it. The result was practically civil war. Soldiers were sent to put down the Covenanters. They hunted and killed them with great cruelty, and Scotland became a land of blood and tears.

Grizel's father held to the Covenant, and was several times imprisoned as the result. When Grizel was only ten years old she knew all that was happening. She was filled with sympathy for the persecuted Covenanters, and burned with wrath against the cruel soldiers. At twelve years of age she was called upon to play her first heroic part in life.

A splendid character named Robert Baillie, a bold Covenanter, had been cast into Edinburgh Prison. He had made the mildest attempt to obtain justice for a Covenanting minister who had been wrongfully arrested through the false charges of a scoundrel. The authorities did not bother about the minister; all they

wanted was to get hold of Baillie. They threw him into prison, and detained him for a long time. Eventually, after many pretended trials, they took him, one day, to court in his night-clothes, when he was at death's door, tried him, and sentenced him to be hanged and quartered. And the shameful sentence was carried out upon the dying man. That, however, happened after the date at which our story opens.

At the time that we first meet little Grizel, Baillie was in prison, and it was necessary for Sir Patrick Hume to communicate with him. Sir Patrick dared not go himself, or the soldiers would have seized him as well. So brave little Grizel, this child of twelve, went in her father's place. Seeing a jailer going into the prison, she slipped in behind him and hid herself in the shadow of the cell until he had gone, then came forth into the middle of the cell and delivered the message which her father had given her.

In the cell with the poor prisoner there was a little boy—George Baillie, the prisoner's son. How he admired the bravery and skill of the little girl in eluding the guard and getting into the prison! She, on her part, admired the little boy, who was there sharing the misery of the cell with his father.

Grizel managed somehow to get safely out of the prison and to make her way back from Edinburgh to her father's home, taking the message which the prisoner had given her.

Having executed Baillie, the authorities now thirsted for the life of the valiant Sir Patrick; and about a year after the death of Baillie, the Humes heard that the soldiers were on their way to Redbraes Castle. To be taken would mean death, but how was he to escape capture? It was certain that he could not hide in or near the castle, for the soldiers would search every nook and cranny. Sir Patrick, his wife, and Grizel, and a carpenter named Winter put their heads together, formed a plan, and decided on a hiding-place. They dared not let the other children or servants know it, for fear the soldiers should get the secret out of them.

Winter and Grizel went at dead of night to Polwarth Church, which was a mile and a half from the castle. There they carried a bed and bedclothes, and made a hiding-place for Sir Patrick in the family grave of the Humes in the church. In that resting-place of the dead, the living man was to take up his abode. He went as soon as the retreat was prepared, and when the soldiers arrived at the castle not a trace of him could they find. They could only believe that he had fled from the neighborhood. Meanwhile Grizel's father was safe in the church vaults, but he had to be fed. He could not return to the castle, for the soldiers lingered in the neighborhood; but where he was he might as well be dead, so helpless was he. Brave Grizel was equal to this difficulty also.

Night after night she carried food to her fugitive father. The task of getting this food was in itself very hazardous. It would not have done to take it from the larder, for the servants would have missed it, and have had their suspicions aroused. The only way was for poor Grizel to smuggle the food off her plate, and into her lap, as she sat at meals. That was her method, and once she was nearly discovered. Her mother gave her a very bountiful plateful, and presently one of her brothers, looking at her plate, noticed that practically the whole supply had disappeared, and called the attention of the others to what he thought was Grizel's greediness in eating so much with such speed.

But the smuggling of the food to her father was not Grizel's chief difficulty. Every night, at twelve o'clock, she used to set off to walk the lonely mile and a half to the church. Of course, she had to go alone. That in itself was a terrible trial for the nerves of a young girl. The thought of passing through a graveyard at that hour of night would have sufficed to scare most people. But, in addition, Grizel ran the danger of discovery by the soldiers who were in the neighborhood, and of meeting country people out poaching, who would have followed and spied upon her. Then there were dogs at large to bark at her and increase her terrors. But she smothered all her fears, and, night by night, went bravely on her way to feed her father, to stay and talk for some time with him, to cheer him with such news as she could tell him, and to inspire him with courage to bear his dreadful captivity.

At last Grizel thought it would be safe for her father to return to a hiding-place in the castle. So she and Winter dug a

GRIZEL HUME IN THE PRISON AT EDINBURGH



The brave little Grizel hid herself in the shadow of the cell until the jailer had gone. Then she came forth to give her father's message to the prisoner. How the prisoner's son, who was in the cell, admired the brave girl!

great hole in the basement of the castle. They were afraid to use a spade lest the noise should be heard; so they used their finger-nails for the work. Early every morning they would take up, in a cloth, the soil dug out during the night, and empty it in the garden, and cover over the hole. At last the hole was made large enough to admit a big box. In this they placed bed and bedding, and then, one night, Sir Patrick crept home and hid himself in the new sanctuary. For a week this refuge held good, but water drained into the hole and made it impossible for Sir Patrick to remain, so he determined to flee abroad for safety.

Grizel altered his clothes to make them like the clothes of a peasant, and, when news came to the house that the soldiers were again on the hunt for him, he set out. He made his way to London, and secured a passage on board a ship which took him to Europe. His estates were now declared forfeit to the Crown, and the family were left without means. Grizel and her mother went to London and pleaded for support, and were granted $750 a year out of the estate.

Sir Patrick was not idle in the meantime. He joined with others in an invasion of Scotland, but this was defeated, and he had to retire to Ireland, accompanied by his wife and all the children but one, a daughter who was left in Scotland. But the others could not rest without her, so off to Scotland went Grizel, alone into all the dangers of that unhappy country. She rescued her sister, collected some money owing to her father, and then set out to Holland, where the others had gone in advance. Grizel was the little mother of the family. She relieved her mother of the cares of the household, and she studied music and languages and wrote quite charming poetry. The family were very poor, of course, but with such a girl to inspire them, how could they help being happy? Grizel used to say that those years of poverty were the happiest of her life.

She had by this time grown into a beautiful and accomplished young woman, and more than one handsome young man sought her hand. But little George Baillie had, by this time, developed into a handsome, brave young fellow, and, an exile from home, was serving in Holland in the Guards of the Prince of Orange. The friendship begun in childhood between himself and Grizel had ripened, and, poor as they were, the two loved and hoped.

At last their reward came. The Prince of Orange entered England with an army, and the wretched King James II., who had succeeded to the throne at the death of his brother, Charles II., was driven from the land. Then those good and brave men who had suffered in the evil days were restored to their estates. The Princess of Orange so admired Grizel that she wished to make her a Maid of Honor, and always have her at Court.

But Grizel preferred to return to Scotland with her father, who was now created Earl of Marchmont, and made Lord Chancellor of Scotland. Grizel, as an earl's daughter, now became Lady Grizel Hume. But she was not long to be known by that name. George Baillie had returned to Scotland, and the sweethearts were at last married, in 1692, fifteen years after they had first met.

THE MAN WHO LOVED THE HOUSE

HE had a poor little name—William Twopeny—but in other ways he was rich. In 1797, when he was born at Rochester, many great artists were at work in England; and Nelson, always ready to save his country from Napoleon, was soon to win the great battle of the Nile, August 1, 1798.

When Twopeny was eight years old, in 1805, Trafalgar was fought and won, and Nelson, in his last words to his sorrowing officers, said, "Thank God, I have done my duty!"

Then Wellington took up the burden of England's fight for life; and Twopeny was eighteen when peace and safety were gained at last on the stricken field of Waterloo, June 18, 1815, at sunset. Think of those times, read about them, and you will see that it was a noble education to be a child then; for boys and girls were taught by danger to understand that the word *home* meant *country* also. If Napoleon had won, there would have been no British homes in Ireland and Scotland and England.

William Twopeny never forgot that lesson, though he lived to be an old man, dying in 1873. His heart was always young, and from first to last he worked

very hard, learning to know what England was like in the past; how her people lived at home, and how they made beautiful things—houses and cottages and churches, barns and bridges, furniture of many kinds, and songs, plays, and poems, and beautiful pictures.

There was little that he did not know about the story of the English houses; even a few words of help and advice from him were worth years and years of loving patience in a search after truth—after knowledge; and so a great many persons, many of them distinguished, came to him for help when books were written on English churches and English homes. Yes, and we, too, must go to him now, not once, but many times, to make friends with his beautiful work, and to see how he traveled from London to many parts of England, often on foot, drawing with a pencil all the most beautiful things he could find, until his many albums of sketches made a history of English homes and churches, from the twelfth century to the seventeenth.

A year after his death these albums of drawings were presented to the Print Room of the British Museum, in accordance with his last wishes; and anybody who goes there can see them to-day. There are twenty-eight albums in all, and they contain many hundreds of exquisite drawings; yet their beauty is little known. The children of England have not yet heard of them, and the grown-ups are too busy to visit them. Twopeny, then, is a kingdom to be rediscovered; it is he who rules over the realm of home through six centuries of its long history.

And what do these books represent? Houses of English workmanship from the twelfth century to the reign of Charles II. Rooms, too, and beautiful details, like windows and doorways, large fireplaces, within which logs and faggots burned on fire-dogs; and wall-paintings, stained glass, and charming old furniture, which the generations have neither broken nor worn out. And there are castles, and huge barns built like churches, with naves and aisles, setting us thinking of those days when England owed all her riches to her fields, so that foreigners used to say that her wealth was wheat and wool, and that she grew and banked money on the backs of her sheep. Other drawings represent village churches, with tall spires shoot-



A BEAUTIFUL DRAWING BY WALTER TWOPENY OF POUND'S BRIDGE, NEAR PENSHURST, KENT

ing up toward the sun, as if they, like skylarks, wished to be near at the same moment to the points of heaven and home.

Only those who see his pictures can understand the delicate strength and beauty that William Twopeny put into his swift pencil-work. He drew as a musician plays, understanding all and loving all; there was magic in his touch, and a great sympathy in his heart. One thing he never could forget, and it is a thing that we must learn to see with our own eyes. It is this: that Twopeny realized that he, with his pencil, must make real the life in all things. For instance, the life in clouds is their lightness; we see that they are not heavy, but float overhead, and are blown about by the winds. Yet clouds in a great many pictures look as heavy as the walls of a house, or as solid as the trunks of oak-trees. Those pictures are bad, and we must dislike them as Twopeny did.



OLD HOUSES AT CHESTER

Or, again, what is the life of a pool of water? Its liquid transparency; it looks like a brilliant eye in the fields, gazing up at the heavens and changing with their color. Artists must show that in their pictures; water must look like water, and not like hard, slippery ice.

And the reality of many noble old houses must come into the artist's pictures too. We see from Twopeny's drawing that a house stands firmly on solid land, and that it is safe when tempests beat upon its walls. We see, too, that the stones are worn by time and use, but that weather-stains and mosses have hidden many a scar. And artists must show all this if their work is to be good, and to be loved. But when you take a pencil in your own hand and try to draw with its lead point, you feel weak and foolish, perhaps, for how can so much be done without bright colors, with just a few lines in different shades of grey? How, indeed! Yet Twopeny did it. He, with his pencil, could do whatever he wished, swiftly, and with ease. So let us make friends with his delicately strong work, and learn to love what he loved. It is worth while. But what about the man himself? Was he prosperous and happy, or did he die of despair, misunderstood, neglected, and desperately in need of money? Unluckily, very few facts have been discovered. There is no contemporary account of his life, though his drawing and his knowledge helped to make important books on English architecture. But three or four things are beyond doubt. Twopeny was well-to-do, for he was able to be a patron to another artist, J. W. Archer, who received from him a commission to make twenty drawings a year of "Old London." Archer was a clever and charming draughtsman, and it is pleasant to know that he won so much friendly help from Twopeny. His work also can be seen in the Print Room of the British Museum. We learn, again, that Twopeny's father was a student of the past, a devoted antiquarian, living at Rochester, but that Twopeny made his home in London. He traveled much in England; we can follow his travels in his work, the best autobiography that a man can write.



STEPS AT POWIS CASTLE IN WALES

THE NEXT GOLDEN DEEDS ARE ON PAGE 5707

A CHILDREN'S POEM BY THACKERAY

IT is as a great author of fiction and romance that we all know Thackeray, some of whose famous stories have been retold in the "Story of Famous Books." He was also a writer of poetry, chiefly of a lively and humorous kind, of which an example is given in the poem "A Tragic Story"; but no writer has excelled him in the power to invest common objects of everyday life with the interest that arises from sentiment and affection. In the poem which we give here we have an admirable example of his power in this direction. It is touched with true human feeling, and although cane-bottomed chairs are now rather out of fashion, the sentiment attaching to any old chair, in which we recall the presence of some departed loved one, will never go out of fashion. The poet's mention of "rich Latakie" in the seventh verse refers to the kind of tobacco he was supposed to be smoking in his snug little room high up in a London dwelling.

THE CANE-BOTTOMED CHAIR

CONTINUED FROM 5504

IN tattered old slippers that toast at the bars,
And a ragged old jacket perfumed with cigars,
Away from the world, and its toils and its cares,
I've a snug little kingdom up four pair of stairs.

To mount to this realm is a toil, to be sure,
But the fire there is bright, and the air rather pure;
And the view I behold on a sunshiny day
Is grand through the chimney-pots over the way.

The snug little chamber is crammed in all nooks
With worthless old knicknacks and silly old books,
And foolish old odds, and foolish old ends,
Cracked bargains from brokers, cheap keep-sakes from friends.

Old armour, prints, pictures, pipes, china, all cracked,
Old rickety tables and chairs broken-backed;
A twopenny treasury, wondrous to see.
What matter? 'tis pleasant to you, friend, and me.

No better divan need the Sultan require
Than the creaking old sofa that basks by the fire;
And 'tis wonderful, surely, what music you get
From the rickety, ramshackle, wheezy spinet.

That praying-rug came from a Turcoman's camp;
By Tiber once twinkled that brazen old lamp;
A Mameluke fierce yonder dagger has drawn,
'Tis a murderous knife to toast muffins upon.

Long, long, thro' the hours, and the night, and the chimes,
Here we talk of old books, and old friends, and old times,
As we sit in a fog made of rich Latakie, me.
This chamber is pleasant to you, friend, and

But of all the old sweet treasures that garnish my nest,
There's one that I love and I cherish the best;
For the finest of couches that's padded with hair
I never would change thee, my cane-bottomed chair.

'Tis a bandy-legged, high-shouldered, worm-eaten seat, feet;
With a creaking old back and twisted old
But, since the fair morning when Fanny sat there,
I bless thee, and love thee, my cane-bottomed chair.

If chairs have but feeling in holding such charms,
A thrill must have passed thro' your withered old arms;
I looked, and I longed, and I wished in despair;
I wished myself turned to a cane-bottomed chair.

It was but a moment she sat in this place;
She'd a scarf on her neck and a smile on her face;
A smile on her face, and a rose in her hair,
And she sat there and bloomed in my cane-bottomed chair.

And so I have valued my chair ever since,
Like the shrine of a saint, or the throne of a prince;
Saint Fanny, my patroness, sweet I declare,
The queen of my heart and my cane-bottomed chair.

When candles burn low and the company is gone,
In the silence of night as I sit here alone—
I sit alone, but we yet are a pair;
My Fanny I see in my cane-bottomed chair.

She comes from the past and revisits my room;
She looks as she then did, all beauty and bloom;
So smiling and tender, so fresh and so fair,
And yonder she sits in my cane-bottomed chair.

SOUND THE LOUD TIMBREL

Thomas Moore, the celebrated Irish poet and the author of this poem, was born in Dublin in 1779 and died in 1852.

SOUND the lound timbrel o'er Egypt's dark sea!
Jehovah has triumphed — His people are free.
Sing, for the pride of the tyrant is broken,
His chariots, his horsemen, all splendid and brave,
How vain was their boasting! the Lord hath but spoken,
And chariots and horsemen are sunk in the wave.
Sound the loud timbrel o'er Egypt's dark sea!
Jehovah has triumphed — his people are free.

Praise to the Conqueror, praise to the Lord,
His word is our arrow, His breath is our word!
Who shall return to tell Egypt the story,
Of those she sent forth in the hour of her pride?
For the Lord hath looked out from His pillar of glory,
And all her brave thousands are dashed in the tide.
Sound the loud timbrel o'er Egypt's dark sea!
Jehovah has triumphed — His people are free.

PIPING DOWN THE VALLEYS WILD

William Blake, the famous English poet, has always a touch of the mystical and imaginative even in his simplest verses, and this poem is no exception to the rule. What the poet means to suggest to us is the inspiration of the true singer of Nature, whose written poems should be as much in tune with Nature itself as the imaginary piper referred to in the following poem, who turns his hollow reed into a pen to write down for ever the songs he has been piping.

PIPING down the valleys wild,
Piping songs of pleasant glee,
On a cloud I saw a child,
And he, laughing, said to me:

"Pipe a song about a lamb."
So I piped with merry cheer.
"Piper, pipe that song again."
So I piped; he wept to hear.

"Drop thy pipe, thy happy pipe;
Sing thy songs of happy cheer."
So I sang the same again,
While he wept with joy to hear.

"Piper, sit thee down and write
In a book that all may read."
So he vanished from my sight,
And I plucked a hollow reed.

And I made a rural pen,
And I stained the water clear,
And I wrote my happy songs
Every child may joy to hear.

HERACLITUS

This very beautiful little poem by William Cory, generally called William Johnson Cory because his name was formerly Johnson, is supposed to be a farewell tribute from the friend of a Greek poet, whom we know only by tradition. There was a famous Heraclitus, a philosopher of Ephesus, who lived 500 years before the birth of Christ, but the Heraclitus here addressed was a different person, who lived a century or more later. Whereas the philosopher's language was uncouth and difficult to understand, the poems of the later Heraclitus were famed for their beautiful melody and simplicity. The life of the philosopher is dealt with in another page of this book. William Cory, was a well-known scholar and an assistant master at Eton College. Caria was a place in Asia Minor where Heraclitus lived.

THEY told me, Heraclitus, they told me you were dead,
They brought me bitter news to hear and bitter tears to shed.
I wept as I remembered how often you and I
Had tired the sun with talking and sent him down the sky.

And now that thou art lying, my dear old Carian guest,
A handful of grey ashes, long, long ago at rest,
Still are thy pleasant voices, thy nightingales, awake;
For Death, he taketh all away, but them he cannot take.

MASSA'S IN THE COLD, COLD GROUND

Stephen Collins Foster, the author of the following familiar poem, wrote many other well-known songs, among which may be mentioned the following—"Old Folks at Home," "The Suwanee River," and "My Old Kentucky Home."

ROUND de meadows am a-ringing
De darkey's mournful song,
While de mocking bird am singing
Happy as de day am long.
Where de ivy am a-creeping
O'er de grassy mound,
Dare old massa am a-sleeping,
Sleeping in de cold, cold ground.

Down in de cornfield,
Hear dat mournful sound:
All de darkeys am a-weeping,
Massa's in de cold, cold ground.

When de autumn leaves am falling,
When de days are cold,
'Twas hard to hear old massa calling
Cayse he was so weak and old.
Now de orange trees am blooming,
On de sandy shore,
Now de summer days am coming,
Massa nebber calls no more.

Massa make de darkeys love him,
Cayse he was so kind,
Now, dey sadly weep above him,
Mourning cayse he leave dem behind.
I cannot work before to-morrow,
Cayse de teardrop flow,
I try to drive away my sorrow,
Pickin' on de old banjo.

THE MAN WHO IS TWELVE YEARS OLD

The great poet Wordsworth said, "The child is father of the man," and in these lines Maurice Smiley, an American writer, develops a similar thought. He sees in every boy of twelve the man into whom the boy will change in future years, and, knowing that all the great men of a later age are now boys, he takes off his hat and salutes the hidden greatness in boys, undeveloped, but there. That is why all boys and girls should be educated—nobody can tell where genius is waiting to be drawn out, the true meaning of the word education.

THERE'S a man that I know, and he lives
near you,
In a town called Everywhere;
You might not think he's a man from his hat
Or the clothes he may chance to wear;
But under the jacket with many a patch
Is a heart more precious than gold
The heart of a man 'neath the coat of a boy,
A man who is twelve years old.

He only is waiting to wear the crown
That already is made for his brow;
And I pray that his mind will always be clean,
His body as pure as snow;
His heart always fresh and sunny and warm,
And free from life's canker and mould,
And may he be worthy his waiting estate,
This man who is twelve years old.

We never may know what the future will make
Of the boys that we carelessly meet,
For many a statesman is now at school,
And presidents play in the street.
The hand that is busy with playthings now
The reigns of power will hold;
So I take off my hat and gladly salute
This man who is twelve years old.

FOUR THINGS

Quite a long sermon is condensed in this pithy little verse by Dr. Henry Van Dyke, a famous American preacher and poet.

FOUR things a man must learn to do
If he would make his record true:
To think without confusion clearly;
To love his fellow-men sincerely;
To act from honest motives purely;
To trust in God and heaven securely.

THE SLEEP

"He giveth His Beloved sleep." Ps. cxxvii. 2.

OF all the thoughts of God that are
Borne inward unto souls afar,
Along the Psalmist's music deep,
Now tell me if that any is,
For gift or grace, surpassing this—
"He giveth His beloved sleep"?

What would we give to our beloved?
The hero's heart, to be unmoved,
The poet's star-tuned harp, to sweep,
The patriot's voice, to teach and rouse,
The monarch's crown, to light the brows?—
"He giveth His beloved sleep."

"Sleep soft, beloved!" we sometimes say,
Who have no tune to charm away
Sad dreams that through the eyelids creep:
But never doleful dream again
Shall break the happy slumber, when
"He giveth His beloved sleep."

O earth, so full of dreary noises!
O men, with wailing in your voices!
O delved gold, the wailers heap!
O strife, O curse, that o'er it fall!
God makes a silence through you all,
And "giveth His beloved sleep."

His dews drop mutely on the hill,
His cloud above it floateth still,
Though on its slope men sow and reap.
More softly than the dew is shed
Or cloud is floated overhead,
"He giveth His beloved sleep."

Yea, men may wonder while they scan
A living, thinking, feeling man,
Confirmed, in such a rest to keep;
But angels say—and through the word
I think their happy smile is heard—
"He giveth His beloved sleep."

For me, my heart that erst did go
Most like a tired child at a show,
That sees through years the jugglers leap,—
Would now its wearied vision close,
Would childlike on His love repose,
Who "giveth His beloved sleep"!

And friends, dear friends,—when it shall be
That this low breath is gone from me,
And round my bier you come to weep,
Let one, most loving of you all,
Say, "Not a tear must o'er her fall—
He giveth His beloved sleep."

ELIZABETH BARRETT BROWNING.

MARCO BOZZARIS

Marco Bozzaris was a Greek patriot, who for a number of years fought against the Turks for the freedom of his country. From the middle of the fifteenth till early in the nineteenth century Greece was under Turkish rule. Marco was killed in an attack upon the Turkish army. This beautiful little poem was written by Fitz-Greene Halleck, an American poet.

AT midnight, in his guarded tent,
The Turk was dreaming of the hour
When Greece, her knee in suppliance bent,
Should tremble at his power:
In dreams, through camp and court, he bore
The trophies of a conqueror;
In dreams his song of triumph heard;
Then wore his monarch's signet ring:
Then pressed that monarch's throne—a king;
As wild his thoughts, and gay of wing,
As Eden's garden bird.

At midnight, in the forest shades,
Bozzaris ranged his Suliote band,
True as the steel of their tried blades,
Heroes in heart and hand.
There had the Persian's thousands stood,
There had the glad earth drunk their blood
On old Platæa's day;
And now there breathed that haunted air
The sons of sires who conquered there,
With arm to strike and soul to dare,
As quick, as far as they.

An hour passed on—the Turk awoke;
That bright dream was his last;
He woke—to hear his sentries shriek,
"To arms! they come! the Greek! the
Greek!"

He woke—to die midst flame, and smoke,
And shout, and groan, and sabre-stroke,
And death-shots falling thick and fast
As lightings from the mountain-cloud;
And heard, with voice as trumpet loud,
Bozzaris cheer his band:
"Strike—till the last armed foe expires;
Strike—for your altars and your fires;
Strike—for the green graves of your sires;
God—and your native land!"

They fought—like brave men, long and well.
They piled that ground with Moslem slain,
They conquered—but Bozzaris fell,
Bleeding at every vein.
His few surviving comrades saw
His smile when rang their proud hurrah,
And the red field was won;
Then saw in death his eyelids close
Calmly, as to a night's repose,
Like flowers at set of sun.

Bozzaris! with the storied brave
Greece nurtured in her glory's time,
Rest thee—there is no prouder grave,
Even in her proud clime.

. . . . . .

Talk of thy doom without a sigh;
For thou art Freedom's now, and Fame's:
One of the few, the immortal names,
That were not born to die.

THE EVE OF WATERLOO

This poem was written to commemorate the awful battle of Waterloo, which was fought in the year 1815. Napoleon was marching upon the city, and Lord Byron, who wrote the poem, brings vividly before us how the brilliant military ball in Brussels was broken up by tidings of his advance. A night of joyous gaiety broke upon a morning of sad farewells.

THERE was a sound of revelry by night,
And Belgium's capital had gathered then
Her Beauty and her Chivalry, and bright
The lamps shone o'er fair women and brave men;
A thousand hearts beat happily; and when
Music arose with its voluptuous swell,
Soft eyes look'd love to eyes which spake again,
And all went merry as a marriage bell;
But hush! hark! a deep sound strikes like a rising knell!

Did ye not hear it?—No; 'twas but the wind,
Or the car rattling o'er the stony street;
On with the dance! let joy be unconfined;
No sleep till morn, when Youth and Pleasure meet
To chase the glowing Hours with flying feet—
But hark!—that heavy sound breaks in once more
As if the clouds its echo would repeat;
And nearer, clearer, deadlier than before!
Arm! Arm! it is—it is—the cannon's opening roar!

Within a window'd niche of that high hall
Sate Brunswick's fated chieftain; he did hear
That sound the first amidst the festival,
And caught its tone with Death's prophetic ear;
And when they smiled because he deem'd it near,
His heart more truly knew that peal too well
Which stretched his father on a bloody bier,
And roused the vengeance blood alone could quell;
He rush'd into the field, and, foremost fighting, fell.

Ah! then there was hurrying to and fro,
And gathering tears, and tremblings of distress,
And cheeks all pale, which but an hour ago
Blush'd at the praise of their own loveliness;
And there were sudden partings, such as press
The life from out young hearts, and choking sighs
Which ne'er might be repeated; who could guess
If ever more should meet those mutual eyes,
Since upon night so sweet such awful morn could rise!

And there was mounting in hot haste: the steed,
The mustering squadron, and the clattering car,
Went pouring forward with impetuous speed,
And swiftly forming in the ranks of war;
And the deep thunder peal on peal afar;
And near, the beat of the alarming drum
Roused up the soldier ere the morning star;
While throng'd the citizens with terror dumb,
Or whispering, with white lips—"The foe! they come! they come!"

And wild and high the "Cameron's gathering" rose!
The war-note of Lochiel, which Albyn's hills
Have heard, and heard, too, have her Saxon foes:—
How in the noon of night that pibroch thrills,
Savage and shrill! But with the breath which fills
Their mountain pipe, so fill the mountaineers
With their fierce native daring which instils
The stirring memory of a thousand years,
And Evan's, Donald's fame rings in each clansman's ears!

And Ardennes waves above them her green leaves,
Dewy with Nature's tear-drops as they pass,
Grieving, if aught inanimate e'er grieves,
Over the unreturning brave,—alas!
Ere evening to be trodden like the grass
Which now beneath them, but above shall grow
In its next verdure, when this fiery mass
Of living valour, rolling on the foe
And burning with high hope shall moulder cold and low.

Last noon beheld them full of lusty life,
Last eve in Beauty's circle proudly gay,
The midnight brought the signal-sound of strife,
The morn, the marshalling in arms,—the day,
Battle's magnificently stern array!

The thunder-clouds close o'er it, which when rent
The earth is cover'd thick with other clay,
Which her own clay shall cover, heap'd and pent,
Rider and horse,—friend, foe,—in one red burial blent!

THE BIVOUAC OF THE DEAD

This poem, by Theodore O'Hara, was written in memory of the Kentucky soldiers who were killed in the Mexican War. Part of it is inscribed on a monument in the burying grounds wherever the soldiers of the United States lie at rest.

THE muffled drum's sad roll has beat
The soldier's last tattoo;
No more on life's parade shall meet
That brave and fallen few.
On Fame's eternal camping ground
Their silent tents are spread,
And glory guards, with solemn round,
The bivouac of the dead.

No rumor of the foe's advance
Now swells upon the wind;
No troubled thought at midnight haunts
Of loved ones left behind;
No vision of the morrow's strife
The warrior's dream alarms;
No braying horn, no screaming fife,
At dawn shall call to arms.

The neighing troop, the flashing blade,
The bugle's stirring blast,
The charge, the dreadful cannonade,
The din and shout are past;
Now war's wild note nor glory's peal
Shall thrill with fierce delight
Those breasts that never more may feel
The rapture of the fight.

Like the fierce northern hurricane
That sweeps his great plateau,
Flushed with the triumph yet to gain,
Came down the serried foe.
Who heard the thunder of the fray
Break o'er the field beneath,
Knew well the watchword of that day
Was "Victory or death."

Long had the doubtful conflict raged
O'er all that stricken plain,
For never fiercer fight had waged
The vengeful blood of Spain;
And still the storm of battle blew,
Still swelled the gory tide;
Not long, our stout old chieftain knew,
Such odds his strength could bide.

'Twas in that hour his stern command
Called to a martyr's grave
The flower of his beloved land
The nation's flag to save.
By rivers of their fathers' gore
His first-born laurels grew,
And well he deemed the sons would pour
Their lives for glory too.

Sons of the Dark and Bloody Ground,
Ye must not slumber there,
Where stranger steps and tongues resound
Along the heedless air;
Your own proud land's heroic soil
Shall be your fitter grave;
She claims from war his richest spoil—
The ashes of her brave.

Rest on, embalmed and sainted dead,
Dear as the blood ye gave;
No impious footstep here shall tread
The herbage of your grave;
Nor shall your glory be forgot
While Fame her record keeps,
Or Honour points the hallowed spot
Where Valour proudly sleeps.

Yon marble minstrel's voiceless stone,
In deathless song shall tell,
When many a vanished age hath flown,
The story how ye fell;
Nor wreck, nor change, nor winter's blight,
Nor Time's remorseless doom,
Shall dim one ray of glory's light
That gilds your deathless tomb.

THE GREAT ADVENTURER

The author of this song is not known. It was written some time in the 17th century by an English poet who most probably belonged to the so-called Cavalier Poets, distinguished for the melody of their verse and their sprightly fancy.

OVER the mountains
And over the waves,
Under the fountains
And under the graves;
Under floods that are deepest,
Which Neptune obey;
Over rocks that are steepest
Love will find out the way.

Where there is no place
For the glow-worm to lie;
Where there is no space
For receipt of a fly;
Where the midge dares not venture
Lest herself fast she lay;
If love come, he will enter
And soon find out his way.

You may esteem him
A child for his might;
Or you may deem him
A coward from his flight;
But if she whom love doth honor
Be conceal'd from the day,
Set a thousand guards upon her,
Love will find out the way.

Some think to lose him
By having him confined;
And some do suppose him,
Poor thing, to be blind;
But if ne'er so close ye wall him
Do the best that you may,
Blind love, if ye so call him,
Will find out his way.

You may train the eagle
To stoop to your fist;
Or you may inveigle
The phoenix of the east;
The lioness, ye may move her
To give o'er her prey;
But you'll ne'er stop a lover;
He will find out his way.

WHAT EVERY WISE CHILD SHOULD DO



IF I want to be happy
And quick on my toes,
I must eat my food slowly
And breathe through
my nose.

I must press back my
shoulders,
And hold up my head,
And *not* close my window
When going to bed.

I must soap my
bath-flannel,
And scrub all I know;
I must then take a
towel
And rub till I glow.

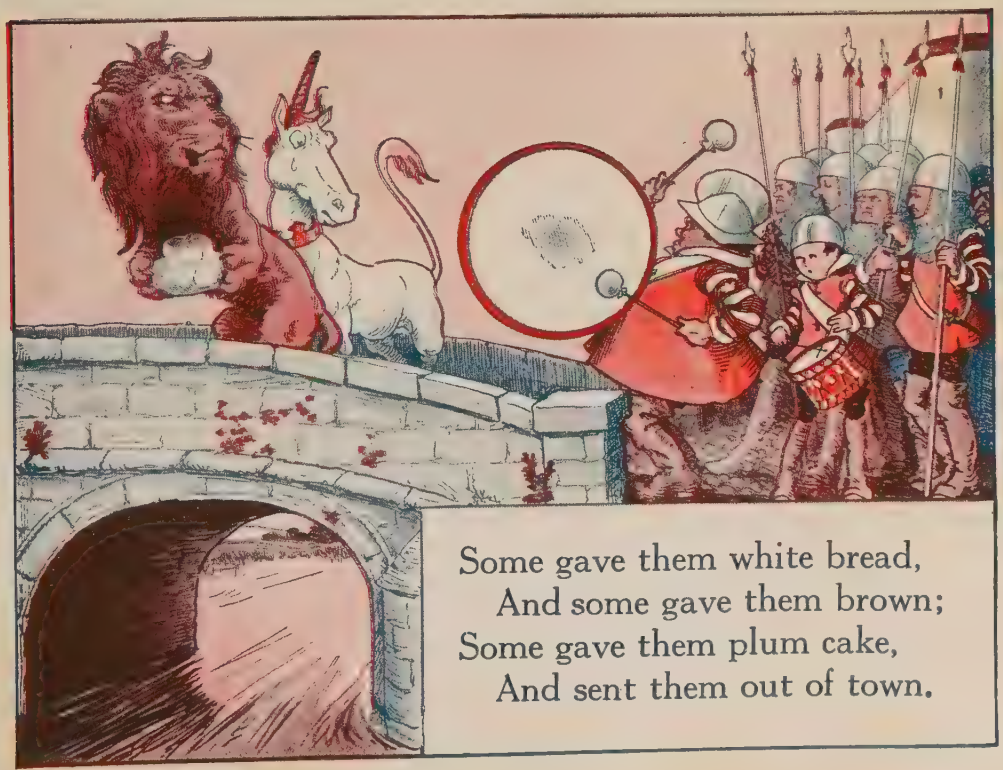
I must never be idle,
And loll in my chair;
Or shout like a demon,
And act like a bear.

I must play and not fidget,
Read books and not flop;
Begin all with a purpose,
And know when to stop.

I must love what is noble,
And do what is kind;
I must strengthen my body
And tidy my mind.

Yes, if I would be healthy,
And free from all cares,
I must do all I've told you,
And *mean* all my
prayers.


The Lion and the Unicorn
Were fighting for the Crown;
The Lion beat the Unicorn
All round about the town.


Some gave them white bread,
And some gave them brown;
Some gave them plum cake,
And sent them out of town.

Hush-a-bye Baby on the Tree Top

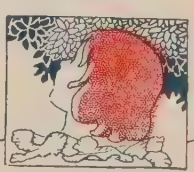


Very Soft.

Hush-a-bye, ba - by, on the tree - top, When the wind

blows the cra - dle will rock; When the bough breaks the

cra - dle will fall: Down will come ba - by, cra - dle, and all!



IT is well to know something about worry, the dreadful feeling that makes us feel as if all the world had gone awry. But once we have found out what it is, we must put it away from us. A thermos bottle is a most useful thing for picnics. If we have two we can provide ourselves with both hot soup and cold lemonade. This is a curious fact that is really quite puzzling until we know the simple scientific reason for it. It is not always so easy to find an answer to questions. Why sugar should dissolve more quickly in hot water than in cold is a puzzle to which the Wise Man tells us even learned scientists have not been able to find an answer. The Wise Man tells us too that no matter how fond we are of wild birds, it is better to keep away from their nests. If we touch it or handle the eggs it may be that the mother birds will fly off, and the poor birdlings in the eggs will die of cold. Even after they are hatched it is better to keep away and not frighten the mother away. Baby birds need great care, even though, the Wise Man says, they grow up much more quickly than baby boys and girls.

WHY DO WE WORRY?

CONTINUED FROM 5516

WORRY is a state of feeling, and, as everyone knows, it may be aroused by many causes, real or imaginary. Yet this is a question well worth answering, because it helps to teach us a great fact about ourselves. If we think about worry and observe ourselves, we shall notice that we do not worry about the present. We worry about having to go to the dentist, but when the tooth is actually being drilled we do not worry, though we may fear. Worry is perhaps fear, but it is always about either the future or the consequences of the past—usually the future.

A creature, then, that lives entirely in the present cannot worry; but all creatures except ourselves live in the present, and babies and very small children live in the present, too, so they cannot worry. The great and grand mark of man, however, is that, as Shakespeare said, he is "made with such large discourse, looking before and after." It is this power of "looking before and after" that makes worry possible; and, therefore, just as worry cannot happen in cabbages or animals, or even in infants or two-year-olds, so it is *most* liable to happen in the highest types of human being, who invariably have most imagination and live least in the present, and most in the future.

This power of mankind by which we are aware of ourselves, and can figure ourselves in the past and in the future, is called self-consciousness, and is, above all things, that which distinguishes us from all other creatures in the world. And worry, as we have seen, is one of its consequences.

WHAT IS A THERMOS FLASK?

A thermos is a flask that keeps a hot liquid hot for a very long time Thermos is simply the Greek word for heat; but it is really not a particularly good name, because though it keeps a hot liquid hot for a long time, it also keeps a cold liquid cold. That fact really gives us the key to what happens, if we have right ideas as to what heat is. Heat is something, and cold is only the absence of heat. Therefore, when this little instrument keeps a hot thing hot, it must, somehow or other, be keeping the heat in, and when it keeps a cold thing cold, it must somehow be keeping heat out.

Now, we know perfectly well that a flannel blanket, for instance, acts in just the same way. It will keep a hot thing hot because it keeps its heat in, and it will prevent ice from melting because it keeps heat out. It does these things because it is a bad conductor of heat.

A thermos flask, then, must somehow be a bad conductor of heat. Between the outer and inner walls there is a space which is full, as far as possible, with simply nothing.

If there were air there, in the usual quantity, it would readily conduct the heat from inner wall to outer wall, or in the opposite direction, but the flask is so made that there shall be as little air in this space as possible, and so there is very little to carry heat across. A blanket is more like a great gate set up through which the heat cannot go in or out, but the thermos flask is more like a moat or ditch over which the heat cannot jump in or out.

Does whiskey make people warmer?

This is one of the interesting cases, of which the world is full, where the true answer to a question is just the opposite of what people think it to be. In every part of the civilized world men are still to be found who tell us that they drink whiskey to keep out the cold, and this seems to be a sensible thing to do when one is going out into the cold night air from a warm room. People judge in such a case by what they feel, and indeed when our grandfathers were children there was no other way of judging. It is certain that whiskey makes a man feel warmer, and if he *feels* warmer he naturally thinks and says that he *is* warmer.

Yet, in fact, he is cooler. This can be shown nowadays by means of the little thermometers which doctors now use, and which tell not the temperature of the skin, which matters nothing, but the temperature of the blood, which matters everything. The thermometer shows that after drinking whiskey a man's blood becomes colder, and so the man's body, as a whole, is colder, though for a time his skin feels warmer, and indeed is somewhat warmer.

What happens when a man drinks whiskey?

When a man drinks whiskey, the whiskey causes a large quantity of blood to pass quickly through the blood-vessels of the skin. This means that the skin is made warmer, and as the nerves of heat end in the skin, we are deceived and say that we are warmer. But really we are cooler, because the warm blood, exposed in large quantities at the surface of the body, rapidly loses a quantity of its heat to the outside world. This is only one of many instances where we are deceived by the surface of a thing, and the thing in this special case is our own body.

Why does milk turn sour?

The change that takes place in milk when it turns sour is entirely due to the growth of microbes in it. If the milk is boiled, and then sealed up in something, it will not turn sour in any weather or in any length of time, because all the microbes in the milk, including those that turn it sour, have been killed by the boiling. Much warmth and electricity in the air to which milk is exposed favor the growth of the microbes in the milk. Microbes are plants, and we know that warmth and electricity in the air favor the growth of other plants, such as wheat or potatoes.

The stuff in sour milk which gives it its sour taste is an acid, of course, and it has the special name, which everyone should certainly know, of *lactic* acid, which simply means milk acid. It is made by microbes from the sugar in the milk, which has the corresponding name of *lactose*. Lactic acid is not bad for us, but good for us; and if good, clean milk turns sour it is none the worse for that, but in some ways, and for some people, it is much better than is milk as we usually drink it. Milk that has turned sour is highly recommended by many doctors for curing certain diseases.

Why can baby animals walk so much sooner than human babies?

A great book might be written about this wonderful question. One of the answers to it is that there is to some extent a proportion between a creature's length of life and the length of time it takes to grow up. We should expect the growing-up process to be quicker in the case of an animal that is very old at fifteen than in the case of a creature that may live to be a hundred or more years.

But this fact does not nearly account for the extraordinary difference in the rate of development of babies as compared with the lower animals. There must be some other principle at work. Part of the explanation is that in the highest types of animals we find that the young creatures are much more dependent upon their mothers, and for a much longer time, than are the lower animals. This is true if we compare the lives of birds with those of reptiles, or horses or dogs with fishes, or even with rats and rabbits. It is far more true when we compare ourselves with the lower animals.

Now, at first it seems surprising that the highest kinds of creature should be less capable when they are born than lower kinds. But if we compare man with, say, a dog, we shall see the reason. A dog, because it is much higher than a rabbit or a fish, can learn a little; but most of what it does it does by instinct, and instinct requires no teaching. A man has instincts too, but the great mark of him is that he is intelligent; and though intelligence can learn everything, it has everything to learn. The baby is born knowing nothing, but with endless powers of learning, and that is why it takes so long to do things.

WHY DOES A BIRD FORSAKE ITS NEST IF ITS EGGS ARE TOUCHED?

The whole meaning and purpose of the bird's nest is to be found in the eggs. The eggs exist for the future of the bird race, and the nest exists for the sake of the eggs. If the eggs are stolen, then the instinct which made the bird build the nest is disappointed, and we cannot be surprised that the bird deserts her nest.

But sometimes it may be that, even though some or all of the eggs are left, the bird may forsake her nest if it has been touched. In such cases we can only guess what really happens.

It may quite possibly be that, when the eggs have been handled, the bird is aware of a strange scent in the nest, and this "puts her off," as we say. She feels that something is wrong, and she loses heart and goes away. But such a question could only be answered for certain by making many careful experiments, which would not be kind.

IS IT TRUE THAT GREEN WALLPAPER POISONS US?

It is true that some kinds of green wallpaper used to be capable of poisoning people, but probably no paper of that kind is allowed to be made now in any civilized country. Green is not one of the easiest colors to obtain, even though so much of Nature is green, for the green dye of plants will not remain the same for long, and it soon changes its color completely.

Therefore, at one time certain green salts of arsenic were used to die wallpaper and other fabrics. But arsenic in all its forms is one of the most deadly and horrible of poisons, being poisonous, indeed, to every kind of living creature.

WHAT IS VERDIGRIS?

Verdigris is the rather curious name of a particular salt or compound of the element called copper. It is a compound made of copper and the acid called acetic acid, which is the acid that gives its taste to vinegar. So, in the language of chemists, verdigris is copper acetate. Copper is, under certain conditions, a poisonous metal, and so many people are very much afraid of verdigris when they see a film of it on copper taps, for they think they might be poisoned through drinking the water that comes from the taps. But verdigris is not so poisonous as that, though it is better to keep taps clean. It has a very brilliant green color, as we might guess if we look at the first four letters of its name, which are the French for green, and which we see in such words as verdure and verdant.

IF WE COULD GO ON TRAVELING UPWARD, WHERE SHOULD WE END?

The word upward has no real meaning. The earth is a round ball. Upward simply means away from the ball, and we might therefore make a continuous upward journey from any point of the earth's surface, and the result would be different in every case. The upward journey from any point would, for instance, be in directly the opposite direction to the upward journey from another point exactly on the other side of the earth. For every point on the earth's surface plainly must have a point exactly opposite it, and the point opposite any other is called its antipodes, a word which means opposite the feet.

But suppose we make our question more manageable by thinking of only one point, anywhere on the earth's surface, and then asking what would be the end of a continuous upward journey from that point. Then time comes into the question, for the line of the journey would never be the same in any two seconds of time, in consequence of the various motions of the earth. But suppose we fix on a place and on a moment of time, the answer, whatever the place and the moment, will be the same—that such a journey would have no end, for we cannot imagine that space has any end at all.

IS IT GOOD TO HAVE TO WORK?

Work is a thing we all tire of at times, and we all enjoy the hour when we can

stop working. We look forward to our vacation; we don't like having to get up in the morning; and we wish someone would leave us a fortune; and yet, if we have any sense at all, we know in our hearts that our work is good for us, and we see every day around us the consequences that follow when people, even those who have plenty of money to amuse themselves, have no work to do.

There are two classes of people with money—those who find some work for themselves, in spite of their money, and those who do not. The first are probably happier for their money; it need do them no harm, and may do them much good. But those who find no work to do are always the worse for their money. Human beings must have occupation and a purpose in life, or their lives are worth less than nothing, both to themselves and to other people.

Is it necessary for all living creatures to work?

It is not true of some of the lower forms of life, such as lizards, that work is necessary to them as it is to man; it is natural to them to do nothing. They do not get bored, and their bodies do not get soft and poor, and they do not eat and drink more than is good for them. But the great mark of human beings, and especially of the highest kinds of human beings, is that they are made, in every bone and cell and impulse, to do things, to form purposes and carry them out.

Why does sugar dissolve more quickly in hot water than in cold?

This sounds a very simple sort of question, which anyone ought to be able to answer, but, in point of fact, it is extremely difficult, and no one can answer it. We can only study the facts and hope that those who come after us will be able to add to them from the greater knowledge that they have gained, and find out the answer at last. The main fact, we know, is that what is true of sugar is true of almost everything. If it were true of everything, the case would be simpler, but there are a few things which will dissolve in cold water and not in hot water. These very curious exceptions make it all the more difficult for us to answer this question, but if only we knew more about it, we should doubtless find that they really furnish the very key to the answer.

We can see how difficult such a question as this must be when we ask ourselves what really happens when anything dissolves, or melts. If we could answer that, no doubt we could explain how different conditions affect the melting.

But how can we expect to do so while we cannot yet answer the first question—what happens when sugar melts? We know that the sugar disappears; we know that it is not gone, for we can get it back, and the water containing it is heavier by just the weight of the sugar that is melted in it. But what state the sugar is really in when it has melted we cannot say.

When water is hot it takes up more room than when it is cold, and we must suppose that there is more room between the molecules of it. This should mean that there is more room to hold the molecules of sugar; and that is perhaps the best sort of a guess that we can make in answer to this very difficult question.

Why does a planchette move when we put our hands on it?

The answer to this question is the same as would be the answer to the question why one person holding another person's hand can do what that other person is thinking of, without a word being said. If we have things in our minds that suggest motion or that can be expressed through any kind of muscular motion, as in going to a certain place, or in speaking, or in writing, our muscles are affected without our knowing it, by our thoughts.

We may be making no act of the will, and are quite unconscious of what is going on, but the mere fact that we have a certain thing in our minds, such as the idea of moving across the room, or the idea of the letters that form a certain word, is all the time affecting the muscles by which we should give expression to that idea if we chose to do so.

Thus, one person, without any very strong will of his own, merely by firmly keeping an idea in his head and thinking steadily of it, can make another do quite complicated things, and thus also a thing like a planchette is liable to move when we put our hands on it.

The key to these cases is to be found in the automatic muscular movements of which we are unconscious, and which have no effect upon our minds, but are of great importance and are in constant use.

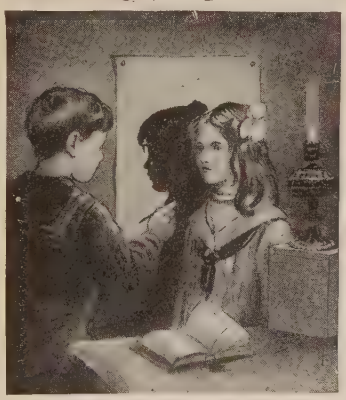
THE NEXT BOOK OF WONDER IS ON PAGE 5721.



MAKING AN OUTLINE PORTRAIT

CONTINUED FROM 5526

IN the days of long ago, before photography was invented, our grandfathers and grandmothers used to have portraits of themselves taken sideways. They were what were known as silhouette portraits, and they were not taken with a camera, but were cut out of thin black paper, and stuck upon a white card. The word *silhouette* comes from the name of Monsieur Etienne de Silhouette, a French Minister of Finance in 1759, who was thought to be very grasping, and it was given to this kind of portrait because it consists of the mere outline, and is quite mean, or meagre, in detail. Until a few years ago men might often have been seen in the streets of Boston and other big cities who, for a penny, would cut out a silhouette portrait of anyone who cared to stand before them for a few minutes. These portraits were about the size of a carte-de-visite photograph, and were often very good likenesses. Of course, these portraits were more or less accurate as side views of the face, according to the skill of the man who cut them out. If he had much artistic ability they were good likenesses; if not, they were sometimes very poor.



A SILHOUETTE PORTRAIT

But in still earlier days, when silhouette portraits were fashionable and popular, they used to be done in a more scientific way. The person whose portrait was to be taken sat sideways before a screen, with a light on a table on the other side of him, and in this way a clear shadow was thrown upon the screen, which gave a perfect portrait if the light and sitter were arranged properly.

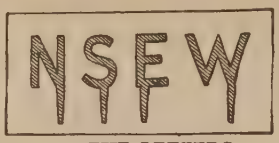
Then the outline would be traced upon the screen, and from this it was, by mechanical means, transferred, on a small scale, to a sheet of special black paper, cut out, and mounted on card. Many of these old silhouette portraits have come down to us. There is a famous one of Edward Gibbon, the historian, which gives not only his face, but his whole figure, and he considered it the best of all the portraits of himself that had ever been drawn. There is also a famous silhouette portrait of Robert Burns, the Scottish poet.

Now, any clever boy or girl can, with a little care, make silhouette portraits of his or her friends. It is not necessary to have an elaborate screen such as the old silhouette portrait makers used; all we need do is to fasten a sheet of paper on a flat wall, put the sitter near it, with a good light of some kind on a table, placed in such a way as to throw a shadow of our friend upon the paper. Then, with a pencil, we draw carefully round the outline of the shadow, and afterwards cut it out. We may use paper that is black on one side and white on the other, drawing the outline of the face on the white side, and sticking the portrait down with the black side up. Or we may draw the shadow-portrait on white paper, cut it out, and then, using it as a pattern, make a copy in black paper. The picture on this page shows how a person should sit to have his portrait taken in silhouette, and at the top of the page are some specimen silhouette portraits. The sitter should, of course, sit perfectly still while the outline of the shadow is being drawn, and if necessary the head may be supported in some way so that the shadow may remain perfectly still.

Silhouette portraits must show the face sideways, as a front view would give nothing at all distinctive to indicate the features of the person represented; whereas, when the nose and chin are seen, we have the likeness of a person. In arranging the light, we should be careful to place it well back on the table, so that there may be no chance of it being knocked over.

AN EASILY MADE WEATHER-VANE

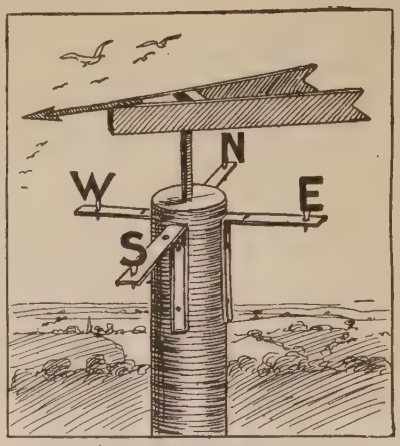
EVERY clever boy can erect a weather-vane in his garden with very little trouble and at scarcely any expense. We obtain a fairly stout pole or post, straight, but whether square or round in shape does not matter at all. We then screw on to the post, at right angles to each other near the top, four iron right angles such as can be bought at any hardware store for a few cents. These are to indicate the four points of the compass. With a fretsaw we cut out four wooden letters, N., S., E., and W., with an arm underneath each as shown in picture 1. This arm is, in each case, to insert into the screw-hole that is always found in the iron angles that we buy at the hardware store. We must therefore have the arm wide enough to fit tightly into the hole of the iron angle. It can be kept perfectly firm in the hole by inserting a small piece of wood on each side of it in the hole.



1. THE LETTERS

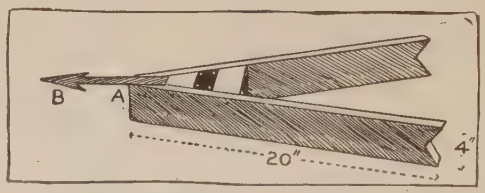


2. THE WEDGE



3. THE WEATHER-VANE IN POSITION

Now we must make a hole in the top of the post, and firmly insert an iron rod about a quarter of an inch in diameter. This rod should be roughly pointed at both ends, and could be obtained from a blacksmith. The pole is now ready, and should be erected in the garden at a spot that is open to the winds from all directions. A sheltered spot is quite useless for a weather-vane. In erecting the post we should dig a hole about 3 feet deep, insert the post, and then fill in the earth, pressing it down tightly. On the ground immediately round the post, we should stamp in some gravel, as this will help to tighten the hold of the earth on the post. If we want additional security in fixing up our post, we can, of course, get some cement from a builder and mix this with water, placing the wet cement in the hole all round the post. When it dries, the cement will hold the post very firmly. Now we make the weather-vane itself. We take a wedge-shaped piece of wood as shown in picture 2, and bore a hole right through it of a diameter large enough for it to turn quite easily and smoothly on the iron rod at the top of the post. Then we nail across this hole at the top of the wedge a piece of sheet-iron, so that, when the wedge is slipped on the iron rod at the top of the post, the rod will not go right through. On each side of the wedge we screw a piece of quarter-inch board, 4 inches wide by 20 inches long, as in picture 4, and where they meet at the point A join them nicely; and bevel to a sharp angle. A metal or wooden arrow may be cut or sawn out and screwed on to the vane to act as the pointer B. We lift the vane on to the rod at the top of the post, fitting the rod into the hole in the wedge, and our weather-vane is quite complete and ready for use. Of course, in erecting the post in the garden we must see to it that the N., S., E., and W. point actually to these different points of the compass. A small pocket-compass, costing a nickel, may be used to guide us in doing this quite correctly.

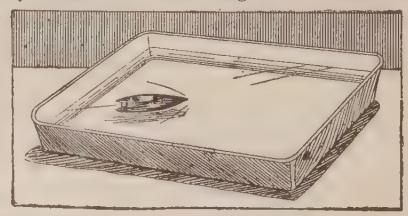


4. THE WEATHER-VANE READY FOR THE POST

A LITTLE BOAT THAT MOVES IN THE WATER

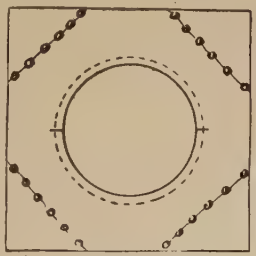
IT is easy to make a simple little boat that will move along in the water without mechanical appliances of any kind. We cut out of a thin piece of tinfoil a shape something like a boat, about two inches in length, with a triangular nick at the end. The tinfoil must, of course, be very thin. Then we place this gently on the surface of the water so that it will float.

Now let us take a piece of camphor, such as can be bought at any chemist's shop for a penny, and from this cut off with a penknife a little piece about the size of a small pea. We place this upon the end of the tinfoil boat at the angle of the nick, so that while resting on the boat it also just touches the water. In a moment or two the boat will begin to move, and will continue to do so as long as the camphor touches the water. By cutting the tinfoil a little curved or like a horseshoe in shape we shall have a boat that will travel round and round in a circular dish or basin. A skilful boy will be able, with a small piece of very thin wire and a fragment of tissue-paper, to erect a mast in the boat, with a flag at the top of the mast.


THE LITTLE BOAT DRIVEN BY CAMPHOR

A PRETTY NEEDLEWORK BAG

A PRETTY little bag to hold fancywork can be made in a very short time by any girl who understands something of plain needlework. The larger we want the bag, the more silk is required, of course; everything depends upon the size of the work it has to hold. But if we remember that, whatever the width, the length must be just double, we shall find we shall not go far wrong. Now, having found an oblong piece of material, twice as long as it is broad, we fold it in half, and with a pair of compasses, or a saucer, draw a round on one half, and cut it out, as shown in picture 1. Then we turn the folded material on the wrong side, and sew the sides together. We turn it to the right side again, and the bag will now be a flat piece of double material. Now our stuff is beginning to look more like a bag, although it is not nearly finished. The next thing to do is to turn our attention to the round hole, which is still raw-edged. As we cannot turn in a hem here, a false piece must be put on; so we cut a little strip of the same material, large enough to go round the hole, but making it a little too big, to allow for the turn where it is joined. We sew this round the hole, putting the two right sides of the material together. When this is done, and the ends are joined together to make it neat, we turn the false piece over and hem it down on the other side. All the plain sewing part of the bag is now finished, but the part that really "makes" the bag is yet to come.



1. THE OPENING



2. THE BAG COMPLETE

Across each corner we draw a line, being careful to draw all four alike, and work French knots along each line, sewing right through the two pieces of stuff. To make French knots, we twist the silk—for we must not use cotton — round the needle several times, and put the needle in where we wish it to go, pulling the silk through until the silk on the right side of the bag sets in a little lump. If this is our first attempt, we may find that we pull the silk right through, but if we pull slowly a little practice will soon put us right. When we have worked all the lines with French knots, as shown in picture 1, we must run a cord through the little false hem. We cut two little slits on opposite sides of the round hole, and work them in buttonhole-stitch—with silk, not cotton—then we run the cord or ribbon through, and the bag is finished. Little silk tassels sewn to each corner make a pretty finish.

If the bag is made of thick cream silk, with the French knots, buttonhole-stitch, and cord or ribbon of primrose, the effect is charming.

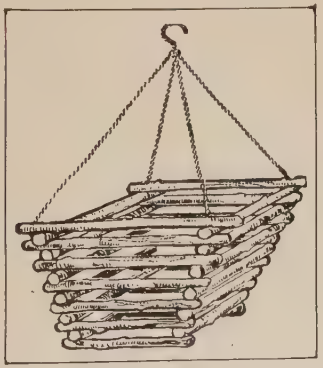
A FERN BASKET FOR A NICKEL

FOR an expenditure of five cents, and with very little trouble, any intelligent boy can make a pretty fern basket. Let us collect some oak branches about three-quarters of an inch thick, and varying in length from six to twelve inches. We shall require between thirty and forty pieces altogether for our purpose.

When we take these home, we must score down the bark from end to end of the sticks, and then, having put them in a pail, we pour boiling water on them. The effect of the scalding will be to strip off the bark, leaving us nothing but the bare sticks, which are just what we want for our purpose.

Besides the sticks which we have collected, all the material we require is a little copper or brass wire, which we can purchase for five cents. Copper or brass wire is better than iron wire, because iron wire would rust through and waste away. It will be seen that the basket tapers from about twelve inches square at the top to about six inches square at the bottom. Of course, we need not keep to these sizes; we can make the basket any other size that we find convenient.

We may color the sticks by putting them into water in which we have put a small amount of permanganate of potash or of logwood. The former will dye the sticks brown, and the latter will dye them an artistic purple. We require to make holes at the ends of our oak sticks. In order to make the holes, which must be slanting, we should use a gimlet, but if we cannot make the holes without splitting the sticks, we can use a red-hot wire for the purpose, heating it again whenever it gets cool. The latter process is slow and tedious, and we should not adopt it unless we are compelled to do so. Then we thread the wires through the holes, as seen in the picture. The wires are twisted together at the top ends, from which our fern basket hangs. We may, if we like, varnish the basket after we have made it. Across the bottom we should put one or two cross sticks, so as to do away with the wide opening. Then we line the bottom and all four sides with green moss, which we can procure for ourselves in the woods. Having done so, we put a layer of stones and gravel in the bottom and fill up the basket with good earth, in which we place the fern. When we wish to water the fern, we ought not to pour water on top of the basket, but dip the entire basket in water, letting it remain for half an hour. Rain or pond water is best, but tap water will do if either of these cannot be got.



THE BASKET READY FOR USE

MORE STAINS AND THEIR REMEDIES

WE have already had an article on some common stains and how to apply "First Aid" to them. Now we will have another page about some different stains and what to do for them. It certainly is not pleasant to find an ugly black ink stain on a pretty white shirt-waist, and it is not very nice to discover an acid or a mildew blemish on an article of clothing. Do you know what to do for a stain on the carpet? Well, if you read this you may learn some remedies to apply to certain stains which are liable to appear at some time or other, either on your clothes or on some article of furniture.

INK STAINS

INK stains are very common, but are not difficult to remove, if we set to work in the right way and as soon after the accident as possible. First dip the stained part in clear water until some of the ink has disappeared, then put the material in warm milk, and rub the spot gently. Milk, either hot or cold, sour or sweet, is used to remove ink from white and colored goods. If the spot is very stubborn, try oxalic acid, which may be purchased from the druggist. Use this very carefully, as it may eat a hole in the goods unless it is instantly washed out. Baking soda, too, will be found very effective also. Salts of lemon may be rubbed on after the spot is dampened with cold water, but this must be washed out again or it will burn the material. Mutton tallow rubbed on the stain before the dress is sent to the laundry will often remove it.

If ink is spilled on the carpet, sponge it up at once with warm, wet cloths, and then rub the spot well with a cloth dipped in cold milk. Wash out with clear hot water and then sift on a little cornmeal or dry sawdust, or even starch or flour.

FRUIT STAINS

FOR a fruit stain on a pretty dress, if taken quickly, first rub on a little salt or borax, and then pour boiling water through the stained part. If the stain has been on for some time, use a weak solution of oxalic acid, taking care to wash it out again immediately after. Javelle water, which the druggist has for sale, is a good remedy for fruit stains. But it must be used only on white things, as it takes out color as well as stains. Tomato-juice and salt may be applied and the dress hung out in the sun. For fresh peach stains, which are especially difficult to remove, lemon and salt seems to be the most effective remedy.

BLUEING

SOMETIMES the laundress leaves a dress too long in the blueing, with the result that there is a dark blue blemish on the dress. It is easy enough to get rid of the spot if you only know the secret. Merely soak the stain in a little kerosene, and then wash it out with naphtha soap.

TAR STAINS

IF you should rub against a carriage wheel, or brush against a greasy part of an automobile, or touch a bit of tar, you know what the result will be—an ugly grease spot which nothing but turpentine will remove. First put a little lard on the spot to loosen the dirt, and with a knife scrape off any loose particles; then sponge the place with turpentine and hang the dress on the line to let the air blow through it.

MILDEW

IF a dress is put away while it is damp or left where there is much moisture, we may find that we have a mould which is difficult to remove. If the material is white, Javelle water may remove the mildew. If this does not remove the stain, try a solution of chloride of lime. If this is used, be sure to rinse the part thoroughly, as chloride of lime is apt to rot the fabric. For thin materials like handkerchiefs use only a weak solution, but for heavier goods, dissolve eight tablespoons in one pint of water, and soak for fifteen minutes. Sometimes mildew will disappear in a few minutes, and again it may take twelve hours or even longer. Do not give up trying, then, too soon.

ALCOHOL SPOT ON WOOD

SOMETIMES an alcohol bottle left on the bureau in the bedroom will cause a white spot on the wood. Instead of trying to wipe up the alcohol when a few drops are spilled on the shelf, put a little oil (sweet-oil or linseed oil) on the spot immediately. Then the alcohol mixes with the oil and will not leave an ugly spot. Rub the place with a little kerosene, and it will look the same as ever. If perfumery or other things that contain alcohol cause spots, this same remedy will answer the purpose of removing them.

STAINS ON THE CARPET OR ON THE WALL

SOMETIMES the boys will track into the house the crude oil or dirt from the street, which leaves a disfiguring place on the carpet. If a stain from oil or soot has injured the carpet, rub the place with dry starch, flour or salt. With a whisk-brush, remove as much of the dirt as possible, and use any of these dry remedies that are suggested.

MUD STAINS

A MUD stain is simple enough to remove, you may say, but there is a word of warning to be given about such a spot. If a dark cloth dress is splashed with mud, wait until it dries, and then give it a brisk brushing with a stiff whisk-brush. If, perchance, a little mark still remains, rub it with grated raw potato, which will cause the spot to disappear.

HOW TO WORK ENGLISH EMBROIDERY

MOST girls nowadays wear soft linen collars and cuffs, and a very dainty finish to a frock they make. But although it is quite possible to buy such things ready made, many of us prefer to make our own. They are simply made, and are of many kinds. Pleated muslin edged with lace looks very pretty, and so does ordinary lace fitted on to a little band of muslin. Worked on white or colored linen, in what is known as broderie anglaise, or English embroidery, they really look quite charming.



1. How to work the scallops.

Picture 5 shows a very pretty example of such work. The collar is rounded and of a "Peter Pan" shape, while the cuffs are just a straight piece. These are 6 inches long, and 2½ inches wide. The collar is 3 inches wide, and measures 13 inches on the inside edge and 23 inches on the outside, or scalloped, edge. They are made of white linen, of the sort known as "shirt-front" linen; this kind is firm, and will not pull out of shape. Half a yard of the linen will be sufficient.

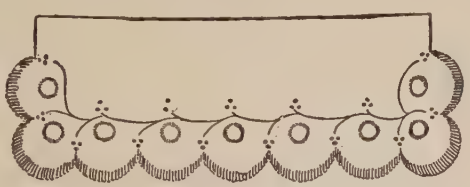
The best white thread to use in the embroidery part is D.M.C., Number 10, which costs three cents a skein, and we do our work with a crewel needle.



2. The hole.

The principal part of the pattern of our collar and cuffs is made up of little holes worked round, decorated with an outline pattern of dots and stem stitch.

The border of our collar is scalloped and buttonholed. The little holes in the pattern are exactly like eyelet holes, only much bigger. They are not difficult to do, but care is needed not to pull them out of shape while we are working.



3. The pattern of the cuff.



4. Stem stitch.

The scalloping can be worked out with the aid of a coin—a twenty-five cent piece is the right size in this case. We start from the centre-back of the collar, and mark one half-circle in pencil, using the coin as a guide, spacing out the scallops evenly round the edge. We shall find that an ordinary-sized collar will take about 11 scallops on each side of the centre one, that is, 23 scallops in all.

When we have marked the outside edges of the scallops, we must use our coin again to get the inside edge, and make each of the half-circles with a crescent shape.



5. One half of the finished collar.

Next we want to put in the circles for the holes. The point at which to place them is easily found, as one hole comes above each scallop. The end of a lead pencil will give us the size, and, if we press it hard on to the stuff, we shall find that it leaves a clear outline, which we can pencil over. We might use a transfer for our pattern, but it is so simple that it seems a pity not to make it ourselves. The dots are next put in—three dots above each scallop-point, and three over each circle, about half an inch above it. The branches are made by connecting up the bunches of dots, as shown in the pattern. This is quite easily done, as the little twigs are short, and we have the dots to guide us. But we must begin our twigs at the centre-back, and from there we make them branch in opposite directions. A very black, hard pencil, cut to a fine point, must be used to mark out the pattern. Before starting, the collar should be pinned to a board with drawing-pins to keep it steady and quite flat. The pencil-marks can be kept from smudging while we work by slightly damping the whole pattern with a sponge and then pressing it with a hot iron. This "fixes" the pattern. Having completed our pattern, we proceed to work the scallops, cutting them away as we go along, being careful to cut only the linen. See picture 1. We must keep the shape of the crescents very neat, and regulate the stitches to fit the shape, making the longest ones come in the middle. Buttonhole stitch is, of course, the stitch used. The "eyelet" holes must be carefully outlined by running a thread round them; then the enclosed stuff is cut out with a very sharp pair of scissors. The hole is edged with plain overcasting stitches, worked very regularly from left to right. See picture 2. We should remember to cut the holes a wee bit smaller than we want them to be when finished, because the working always tends to enlarge them. The twig and dot part of our pattern is very simple to work. Each dot is composed of four little stitches placed close together; the twigs are worked in stem stitch, as is shown in picture 4. The inside curve of the collar must be neatly hemmed with No. 60 white sewing thread, and the cuffs with the same. Two small cuts can be made in the centre of the back of the collar to give a "spring" and make it lie flat when tacked inside the dress; or we can set our collar and cuffs into bands of cambric, three-quarters of an inch wide.

ROBIN HOOD AND HIS MERRY MEN
A LITTLE PLAY FOR THE SCHOOLROOM



THIS play can be acted in a garden. If acted out-of-doors, instead of having the curtain lowered, the actors disappear among the trees.

COSTUMES

Robin Hood, Allan-a-dale, and Little John all wear peaked hats with quills, green or brown tunics, and long stockings with pointed shoes, each carrying bow and arrows, and Robin Hood wearing a horn and sword; Friar Tuck, in a monk's habit; Maid Marian, in a short dress with hanging sleeves, and Rosamund, in a close-fitting gown with hanging sleeves; Simon, in a long, loose gown trimmed with fur, and a low, soft hat, and carrying money-bags.

CHARACTERS

ROBIN HOOD. LITTLE JOHN. FRIAR TUCK. ALLAN-A-DALE. MAID MARIAN. SIMON OF LINCOLN. ROSAMUND (Simon's step-daughter).

Scene: The Forest of Sherwood. Wrapped in cloaks, Friar Tuck and Little John, his hat, bow and arrows beside him, are lying asleep under a tree. Allan-a-dale is keeping watch.

ALLAN: The sun is up. Hey, there! Awake, my merry comrades.

Pokes them with his bow.

FRIAR: Good-night!

sleepily

ALLAN: Wake, rouse thyself; 'tis late! Good-night, forsooth; and thou hast slept without stirring, the last four hours!

Pokes him with his foot. Friar Tuck gets up and rubs his eyes, yawning. Allan pokes Little John, who leaps to his feet and seizes Allan by his throat.

JOHN: Ha, varlet! I've got thee.

ALLAN: Thou'rt a pretty fellow to rouse! Dost take me for an assassin?

JOHN: laughing 'Twas an evil dream I had. Thy pardon, comrade. Ha, here comes our liege lady, Maid Marian!

Enter Maid Marian through the trees at back. Little John puts his arrows on his back.

MAID: smiling Good-morrow, friends! Now let us make ready the breakfast.

ALLAN: There yet remains some of the haunch of venison, lady.

MAID: Bring it hither!

Allan goes out among bushes on left. Little John and Friar Tuck clear leaves from ground at foot of tree.

FRIAR: There, 'tis well!

JOHN: And here comes the breakfast.

Allan comes back with meat on a wooden platter, wine in a horn cup, and bread. He puts them on ground. Singing heard in distance.

MAID: Listen! 'Tis Robin Hood.

Robin Hood comes in from the back, and presents some wild flowers to Maid Marian.

ROBIN: All hail, my merry men! Come, let's eat! I'm as hungry as a wolf. They sit down and eat. How did you sleep after last night's carouse?

FRIAR: I slept soundly, for one.

ALLAN: Ay, indeed! I could scarce rouse him.

ROBIN: 'Tis well you are rested. I have fine sport for you to-day.

JOHN: Sport?

ROBIN: Yes. 'Tis a rich merchant, Simon of Lincoln, who is traveling through the forest with his step-daughter. Report says he has great riches.

MAID: We'll relieve him of them. 'Tis not just that one man should be burdened with so much gold.

JOHN: Yes, indeed! We will share the burden among ourselves. When comes he, master?



ROBIN: He should be here anon. Now list to me, and I will tell you my plan. This Simon may not be as miserly as reported, so we will give him a chance. I will disguise myself as a beggar. If he gives me alms, he shall go unmolested; but if not, then I fear he will leave us a wiser and a very much poorer man.

JOHN: Hist! What is that?

ROBIN: There they come! Hide, all of you!

Standing up All hide but Robin Hood, who, wrapped in a cloak, sits under tree. Simon and Rosamund enter on the right.

ROBIN: Will my lord give a poor man some money?

holding his hand out

SIMON: No! Dost think I have money to give to every idle beggar that besets my path?

ROSAMUND: Nay; I beseech you give the poor man something. I would, and gladly, if I had it.

SIMON: Silence! To Robin: Out of my way, thou wicked knave!

ROBIN: Not so fast, Simon of Lincoln, not so fast! Rises and throws off cloak and hat. So I am a wicked knave, am I? Others come out of hiding. Here be three more—stout, lusty fellows, too.

SIMON: Thieves, as I live!

Tries to run away. Friar and Allan-a-dale seize him. Rosamund looks terrified.

MAID: Fear not, pretty maid. No harm shall befall thee.

ROBIN: Hand over thy riches, friend Simon.

SIMON: Oh, don't take my money—my dear money, my precious gold! Anything but my gold. Take Rosamund. Only leave me my riches!

Clutches at money-bags, which Little John takes.

ROBIN: Shame on thee, coward! Wouldst barter thy step-daughter for thy miserable gold? We will take it from thee, and give it to her. Thou canst thank thy stars that thou hast gotten off so cheaply. Now go! Simon goes out on left. Maiden, thou hast a starved and ill-used look. Is thy step-father cruel to thee? Gives her money.

ROSAMUND: I—I—cannot— Weeps.

MAID: Nay, cry not! I see thou art too loyal to betray thy step-father. Come, he shall not harm thee more.

ROBIN: We will conduct thee to kinder friends.

ROSAMUND: But I have no other friends. Oh, let me stay here with you!

ROBIN: Right willingly! What say you, Marian?

MAID: The more the merrier!

Kisses Rosamund.

ROBIN: Come, comrades, let us welcome her with dance and song.

They dance and sing merrily as the curtain falls, or as they disappear here and there among the trees.

THE RIGHT WAY TO DO SIMPLE THINGS

THERE is a right and a wrong way of doing everything, and it will help us in carrying out some of the simplest tasks of everyday life if we know how to set about the work in the best way. These are some hints as to the right way of doing some simple things:

TO HAMMER IN NAILS

When we are hammering nails into wood, it is a mistake to hold the hammer tightly near the head. The nail must be steadied in place with the thumb and first two fingers of the left hand across the grain of the wood, while a gentle, free tap or two are given, followed by harder and harder blows, and, as the nail gets a firm hold, it is released by the left hand and driven home.

TO COVER A BOOK WITH PAPER

The best material for covering a book is fairly thick brown paper, but sometimes glazed lining is used, and it lasts well.

When covering with paper we lay the book open in it, leaving a margin of about two inches round it, then fold this margin in over the two leaves of the cover. Next we take a pair of scissors, and cut the paper margin at the top in two places slantwise toward what we may call the backbone of the book, repeat this at the bottom, and turn the two little flaps so formed between the binding and the paper cover. Now the margin stands out in two pieces above and two pieces below, so we take the corners of the parts folded over and tuck them down behind the back, between the binding and paper cover, as far as they will go, and fold over the four outstanding flaps.

TO MAKE BUTTONHOLES

When making buttonholes on thin material, baste a piece of India linen or muslin underneath where the buttonholes are to be. Then cut the buttonhole through both materials, and work. When finished, cut away the piece of goods underneath close to the work, and the result is a firm buttonhole.

TO REMOVE A GLASS STOPPER

When a glass stopper refuses to come out of a bottle, we must first give a few regular steady taps downward, round the neck of the bottle. If this method fails, we may try clasping it in our warm hands, or wrapping the neck round with a rag dipped in hot water. One of these methods will generally release the most stubborn stopper.

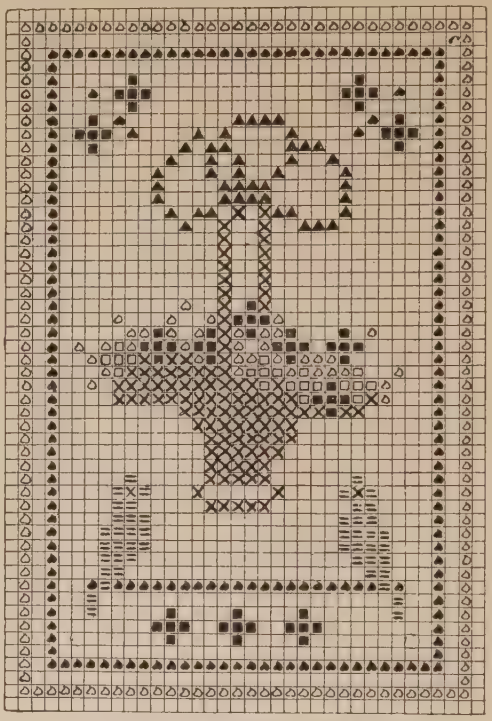
TO DRY AN UMBRELLA

When we come in out of the rain, we must dry our umbrella by opening it and placing it, handle downward, in a current of air, which will quickly dry the silk cover; but at the same time we must be careful to select a spot where the dripping water can do no harm. If we place our umbrella in the stand without drying it, the water will in turn rust the ribs and rot the cover at the end of the stick. We must always remember never to roll up our umbrella when it is at all damp, otherwise the silk will very soon get cut and wear out.

A LITTLE PICTURE ON CANVAS

THOSE of us who have a grandmother have most likely seen the "sampler" which she did when she was a little girl. It is years and years old, and it hangs on the wall in a picture-frame. It has her name on it and the date, and some queer birds and animals, possibly some trees in pots, and some sprigs of flowers. Round it all is a border, and the whole picture is worked in wool on canvas. Now we are going to learn how to do a small sampler or canvas picture for ourselves—much smaller than grandmother's, but quite large enough for us to begin with.

When finished, it will be about the size of a postcard, and the picture on it is made up of a basket of forget-me-nots, tied with a bow, while underneath are perched two little yellow birds. As a great many shops make a speciality of selling little black or dark-brown frames in post-card sizes for ten cents, we shall be able to get our canvas picture framed at no great expense. In fact, it would make a nice little present for someone going away, with its very appropriate message of "Forget-me-not" suggested by the flowers. Now to begin. We shall want very few materials—just a quarter of a yard of double-thread canvas, costing twenty cents per yard, some colored wool, and a canvas needle. The wool can be obtained in dime balls at almost all the fancy-work shops, and the needles are like darners with blunted points. They are very cheap—about six a dime. The colors of wool used are two shades of green, two shades of blue, one pink, one yellow, one brown, and one deep cream for the background. Pretty soft shades should always be chosen, and they must, of course, harmonize.



1. The pattern, worked in seven colors.

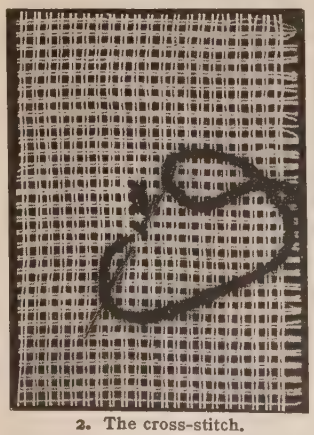
In picture 1, which shows us the design from which we are to copy our pattern, each square represents, in the actual work, a cross, and the whole picture can be copied in this way—that is, by making a cross on the canvas for each square in the position shown in the design. The stitches must completely hide the canvas. In picture 2 we see how a cross-stitch is made. We are going to copy the whole of our picture from the design, and afterwards fill in the background with another color.

Picture 1 gives us the pattern from which to work; this is the "key" to it:

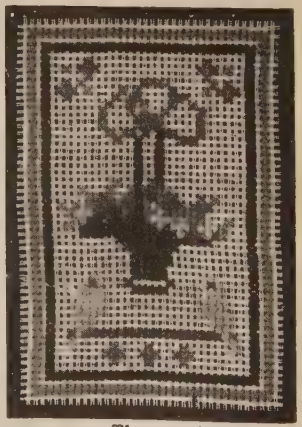
Dark green	—filled-in leaf
Light green	—outlined leaf.
Dark blue	—filled-in square.
Light blue	—outlined square.
Brown	—cross.
Yellow	—two lines.
Pink	—triangle.
Cream	—not shown.

The cream for the background is not shown, as all the empty squares left when our pattern is finished are to be filled in in this color last of all. We fold the quarter yard of canvas into three, and cut off one piece, which will be a square of about nine inches. We must turn the edge in half an inch all around, and tack it down with white cotton. This is done, of course, to prevent the canvas fraying out, and also to prevent our wool from catching in the rough edges. Now we have to find the centre of the square. If we feel we cannot guess it near enough, the best way will be to double the canvas diagonally—from corner to corner — crease it, and then unfold it, and do the same from the other two corners. Where the creases cross will be the centre, or, at any rate, it will be quite near enough, as our canvas will leave plenty of margin.

The best way to begin to work our sampler is to start the centre of our picture in the centre of our canvas. If we look carefully, we shall see that the forget-me-not which comes



2. The cross-stitch.



3. The sampler.

under the handle of the basket is nearly in the centre. So we will choose this to begin with, and make it of blue wool in five crosses. Now we take a thread of green wool, and make a cross on the right of the outside petal of the forget-me-not, then one cross immediately below the last, and then one to the left of that, and one again below. The next cross is below the last, but one square to the left of it; then we make another below, but one square to the left, and then three crosses upwards, which brings us to the forget-me-not again. We take the blue wool again, and make the forget-me-not which comes under the first one, but one square to the right of it. Here are two flowers close together; we make one a light blue and one a darker blue, and then proceed with the green leaves in a similar fashion, just counting the squares. The handle of the basket is worked in brown, starting from the right of our first forget-me-not. The basket comes next, as shown in picture 1. At the bottom of the basket a row of five squares is left to show the rim. These are to be filled in when the background is made. We work the bow in pink, and from this we can easily count to the corner sprays, which are worked in blue and green. For the bar on which the birds are seated we can start from the centre and work outwards—five squares down from the bottom of the basket, and twenty-four for the bar. Next, we work the two birds, and, last of all, the two borders. The birds' eyes should be worked in brown. The birds are made in canary yellow, and the bar in green. The borders also in green, of two shades. We must not forget the three blue flowers below the bar. Picture 3 shows the sampler finished, except for the filling-in of the background. When the background has been filled in with cream-colored wool, we press the picture on to the wrong side with a warm iron.

A SIMPLE GYMNASTIC TRICK

TAKE a long stick, such as one of the larger kinds of broomsticks, and place one end of it in the angle caused by the wall and the floor. Then, holding the other end, pass your body under the stick in the space between your hands and the floor. The problem is to do this without letting go of the stick, and without removing its end from the angle where it is fixed.



Those who do not know the trick will invariably stand facing the wall, but if an attempt is made to pass under the stick in this position the performer will over-balance himself. The correct attitude for those who wish to be successful is to have the back to the wall, the feet and the bottom of the stick forming an isosceles triangle. Then, grasping the stick firmly, and using its lower end as a pivot, it will be quite easy to go under and bring the head and shoulders up again on the opposite side without losing the balance.

This makes an excellent trick for an indoor gathering or a garden party. The stick used must not be so thick that it cannot be grasped firmly, nor must it be so thin that it will easily break.

ANSWERS TO PUZZLES

ANSWERS TO PUZZLES ON PAGES 5523 AND 5524

1. Aspirate, pirate, irate, rate, ate, at, tear, tea, ear, era, rat, tar.

2. G olf
   L ily
   A pe
   D agger
   S ack
   T oulon
   O nyx
   N ora
   E lm

3. I ate next to nothing!

4. 96 triangles.

5. Tennyson.

6. Rainbow.

7.

A	dventure	R
L	e	A
E	ntra	P
X	anthipp	E
A	riost	O
N	u	F
D	o	T
E	ac	H
R	emors	E
P	ul	L
O	ntari	O
P	aralyti	C
E	l	K

8 Pen-man-ship.

9. Crow and parrot transformed, become prow and carrot.

10. (1) Pink; (2) Erica; (3) Iris; (4) Anemone; (5) Daisy; (6) Pansy; (7) Lobelia; (8) Harebell; (9) Rose; (10) Gentian.

11. Because the year 1888 began on a Sunday and ended on Monday, and 1889 began and ended on Tuesday.

12. (1) Chase; hovel; avail; Seine; Ellen. (2) Tame; ager; mean; Erne.

13. A piece of coal. When it sleeps on the wing. An L (ell). Short. Noise. Make the vest first. A law-suit.

14. The farmer added on each side of the field a triangular piece of land, its long side the same length as the side, its two short sides each one half the length of the diagonal, of the original field.

SOLUTIONS OF THE PUZZLE NAMES ON PAGE 5453

1. Hunt the slipper. 2. Croquet. 3. Cat and bat. 4. Hockey. 5. Hide and seek. 6. Hop-scotch. 7. Football. 8. Leap-frog. 9. Cricket. 10. Hare and hounds. In some cases the name is spelt by the pictures, and in others it is represented by the sounds of the words.

ANSWERS TO THE "WHAT IS IT?" GAME ON PAGE 5449

(1) Pumicestone, (2) a snowflake, (3) chalk, (4) the heart, (5) a sponge, (6) electricity, (7) a pearl.

THE NEXT THINGS TO MAKE AND DO ARE ON PAGE 5735.

A BEAUTIFUL PEEP AT THE WORLD



This beautiful Castle of Szepes is a famous landmark in the Carpathian Mountains.



Budapest and the river Danube as seen from the royal castle.

THE LAND OF A THOUSAND YEARS

THE BEAUTIFUL HOME OF A HUNGARIAN NATION

CONTINUED FROM 5560



WHEN the English, about the middle of the last century, were struggling for reforms and rights of all kinds, so that the British nation might be free in fact, as well as in name, they were not alone in their uprising. It was only part of a wonderful wave of feeling that was passing over the wide plains and mountain ranges of all Europe and far beyond; and nowhere was this wave of feeling more rousing, more strong, than in the central country of Hungary.

The depth of the interest felt in the struggle we know by the reception given to Louis Kossuth, one of Hungary's patriots who visited England and the United States in those stormy times. Seldom have both countries been so excited over the presence of a man. This knowledge adds to our interest when we learn that we are to pay a summer visit to the land he sought to free.

But let us consider how we are to make our journey. No doubt we all have different views as to the route by which we should like to reach Hungary. The good sailors will think it delightful if a steamer can take them for a cruise through the Straits of Gibraltar into the beautiful Mediterranean, and along the fairy-like eastern shores of the Adriatic, all islands and bays and mountains, before landing at the busy port of Fiume. It is here that the land-girt country—larger than New Mexico—used to stretch down, a finger, as it were, to touch the salt water. Twelve hours' railway journey by mountain and valley and along the shores of Lake Balaton, the largest lake of Central Europe, fifty miles long, connects Budapest, the capital of the country, with the port of Fiume, which was taken away after the Great War.

More adventurous members of our party are sure to suggest traveling from Hamburg or Bremen across the great north plain of Germany by Berlin and Cracow, and dashing, as the Huns did a thousand years ago, through the passes of the Carpathians. As we look for the exact spots where the terrible horsemen swarmed through, we realize the grandeur of this mountain rampart, which is in many places almost as high as the Allegheny Mountains.

Springing from the gate where the Danube—written Duna in Hungarian—enters the country on the west, the mountain range girdles the great central plain in an immense oval, which sweeps, first north, then east, and then, bending south and west, helps to form the famous Iron Gate, where the mighty river leaves the country on the east.

THE BLUE ROLLING DANUBE

We feel dazed when we think of all the beauties and wonders to be seen in those mountains, but first we would see the blue rolling Danube. Our hearts sing as we think of it. There is our route: let us take train to Vienna, thirty-six hours from London, and approach Hungary by steamer on the wide brimming river. It is but four hours by rail from the Austrian capital to that of Hungary, but we are in no hurry; we want to glide quietly into the heart and soul of the country by the magnificent waterway that leads through it, and to have time to ponder over the outline of a picture that we hope to fill with color and life before we leave.

Our outline begins with the daring Magyars, who under Almos and his son, Arpád, crossed the Carpathians in the last years of the ninth century, settled in the great central plain, and were ruled by native kings for many centuries. In the middle of the sixteenth century Ferdinand of Austria, King of Bohemia was chosen as king. He was not, however, acknowledged king by all the nation, as we have read in the story of Austria. For over one hundred and fifty years the country was torn by dissension, ravaged by war, and crushed by oppression, and it was not until the power of the Turks had waned, at the end of the seventeenth century, that the whole of Hungary was reunited. Even then the struggles to keep its ancient independence were not ended, for the Hapsburg rulers wished to make it a part of Austria.

EQUAL STATES SIDE BY SIDE

The struggles were crowned with final success about the middle of the nineteenth century, and then Austria and Hungary were joined equal states, side by side, the government of each being quite distinct, though they had a ruler in common. Their sovereigns, first Francis Joseph and then Charles, of the Hapsburg family, were Kings of Hungary as well as Emperors of Austria. They agreed to have a common army and navy, common ambassadors to other countries; also, they had customs arrangements in common.

But our steamer is hurrying us on out of Austria, and we are soon at the Carpathian gate where the Alps and the Carpathians face each other. There are stories of battle in every hilltop castle, in every old town and tower that we pass, and we are soon at Pozsony, whose German name is Pressburg, an important town of Hungary. We must stop a day to see it. The old castle in which the Empress Maria Theresa of Austria, in the eighteenth century, made her striking appeal to the Hungarian nobles, with her boy in her arms, was burned down years ago. But the sounding words shouted by the brave nobles as they flashed out their swords in answer to her appeal, "Our life and our blood for our lord and king, the crown and our country!" still seem to echo round Pressburg. From the walls of the fortress we get a magnificent view, as far as Vienna, and spend some time looking over interesting churches, and the cathedral where many of the Hapsburg kings of Hungary were crowned.

We take up our journey again, and before long stop at Gran or Esterzcom, for here is the largest cathedral in Hungary, with its priceless works of art, the seat of the Primate, or chief archbishop. St. Stephen, the first Christian king of Hungary, is said to have been born at Gran, and he was baptized and crowned here.

THE PEOPLE'S LOVE FOR KING STEPHEN

It is not easy for us to realize the deep love and admiration the Hungarians still have for this king of theirs who lived nearly a thousand years ago. He was the great-great-grandson of Arpád, who had led the Magyars over the Carpathians into the great plain. Stephen's chief work was to make Christianity the ruling religion in the new Fatherland. He so civilized the state over which he ruled that the old roving, Eastern spirit—so strong in their forefathers, who saw no harm in robbing and raiding—was gradually subdued, and in time the Hungarians, together with

HUNGARY AND ITS PARLIAMENT HOUSE



THIS WAS COMPLETED TO CELEBRATE HUNGARY'S THOUSANDTH ANNIVERSARY



A BIRDSEYE VIEW OF OLD HUNGARY, SHOWING THE MOUNTAINS AND RIVERS

other races who settled as welcome colonists within their borders, slipped into their place in the European family of nations.

A little beyond Gran, the Danube turns abruptly southward, and we come to the heart and capital of the kingdom, Budapest. We enter it in the dusk of evening. From afar we have seen the golden haze of the thousands of lights in the clear air, and as we draw near and watch the glint and glimmer of the lamps on the embankments and bridges reflected in the dark water of the broad river, we cry out in delight, "We have sailed into fairyland indeed." But no; soldily against the darkening sky stand out the hills and the noble buildings that we look forward so much to seeing. What a situation we discover in the morning light! For several miles on both banks of the river, connected by many magnificent bridges, stand houses and churches and great public buildings. What can we see first?

Let us mount the steps up the hill of St. Gellert, the last spur of the Alps, and stand beside the impressive figure of the missionary holding the cross aloft. St. Gellert was killed soon after St. Stephen's death in the final struggle of the Hungarians with heathenism.

A KING'S HAND AND A BURIED CROWN

What a view! The rolling Danube is in the midst of the picture, bearing many steamers and yachts, and little boats and barges and rafts on its sunny bosom, and the homes of thousands, great and small, crowd beside it, on the hilly slopes of the right bank, on the flat borders of the left. Not far away is the huge pile of the royal palace, where the king lives when he visits his capital. Very splendid are the great halls and rooms and courtyards that now cover the ground so fought for through the centuries, on the fortress-hill of Buda.

In the Chapel Royal of the palace is kept the nation's most treasured relic, the embalmed right hand of St. Stephen, which, for many years, has been carried round and shown to the people each year on St. Stephen's Day. In a strong-room in the palace are other treasures—the sacred crown, the lower part of which was given to St. Stephen by Pope Sylvester II. in the year 1000, along with other emblems of royalty. They may well guard the crown carefully, it has had many adventures, and has been carried hither and thither. Louis Kossuth had it buried for safety for four years, at the extreme end of the old kingdom, where the Danube leaves it, near the Iron Gate.

THE BITTER FIGHT FOR FREEDOM FROM FOREIGN RULE

The Parliament building, on the left bank, with its fine dome and many spires, looks most imposing from the river. Here the members elected by the people meet to make laws and arrange taxes, and discuss matters of government in much the same way as is done in London, Paris and Washington. The constitution of the Hungarians is very old, and their fight to maintain it has been bitter and full of suffering. It is based on a decree, called the Golden Bull, which was made by Andrew II., a descendant of Arpád. This decree was made in 1222, only seven years after Magna Carta.

After Hungary fell under the dominion of the Austrian rulers, strong efforts were made to reduce the country to the state of an Austrian province. But though the people seemed to be almost broken in spirit by the long wars which had impoverished their country, they held tenaciously to their rights. In 1848, when a great desire for freedom broke over all Europe like a wave, they tried to free themselves from Austria, but were unsuccessful. They were defeated and the War of Independence left them in a state of subjection worse than before. They did not give up, however, and in 1867 an agreement, called the *ausgleich*, which gave back the right to govern themselves, was made. The Emperor Francis Joseph, who was crowned king in June 1867, won their hearts, and when he died in 1917, the Emperor Charles Francis succeeded him without question.

A fine service of electric cars, or a comfortable cab with two horses, takes us about the streets, to see the beautiful Town Park and the National Museum, to the magnificent Opera House, to St. Stephen's Cathedral and the St. Matthias Coronation Church; to Margaret Island, a delightful fairyland of shady gardens, with rose hedges and a waterfall and some interesting old ruins.

THE HOMES OF THE HUNGARIAN PEOPLE



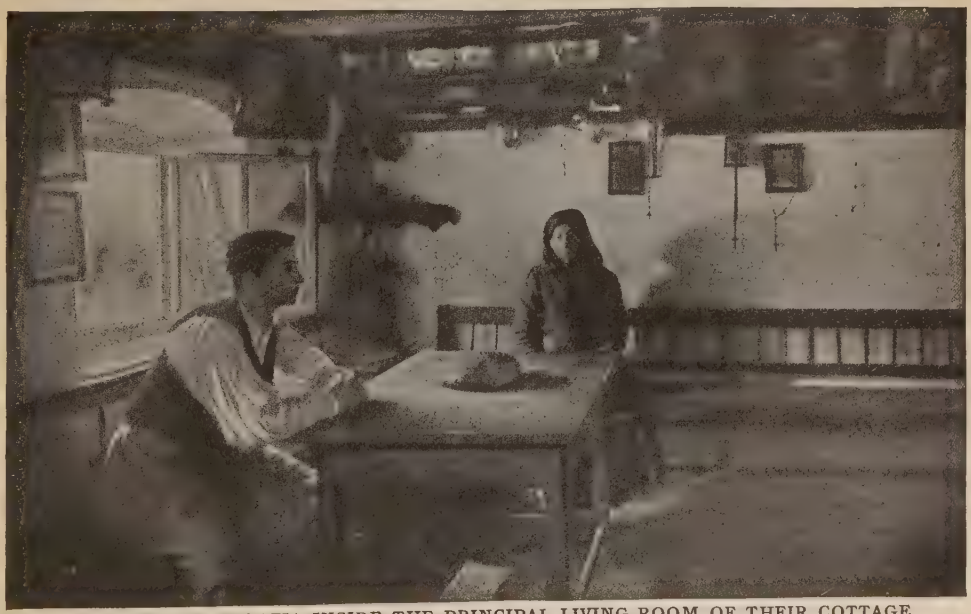
HUNGARIAN WOMEN CRUSHING MAIZE IN A SIMPLE TYPE OF HAND-MILL



MAIZE HANGING FROM A COTTAGE ROOF



INSIDE A MOUNTAIN COTTAGE



PEASANTS OF CROATIA INSIDE THE PRINCIPAL LIVING-ROOM OF THEIR COTTAGE

We feel deep interest in the monuments and statues scattered over the city, for here we are brought face to face with the noble sons of Hungary who have helped to make her great. Their names are difficult to pronounce and to remember, as, indeed, most Hungarian words are, but we are determined to master them.

STATUES OF KINGS AND HEROES OF HUNGARY

There is, first of all, the fine bronze statue of St. Stephen, holding the double cross like the one borne before the Pope, near the Coronation Church; and not far off is that of the brave John Hunyadi, the great Turk-beater, who performed miracles of daring against hopeless odds. The museum, in the Town Park, which is reflected so beautifully in the water of the lake, is a reproduction of John Hunyadi's castle. Another statue is that of King Matthias, who held such a splendid court in Buda in the fifteenth century, and had such a good name for justice. "King Matthias is dead, justice has fled," they cried. How we should have liked to see his library, the Corvina, containing thousands of magnificent books, which were carried away or destroyed by the Turks! It is grievous to think of the Crescent floating above the fortress of Buda for 150 years, and the country round lying desolate and ruined. But what a healer is Time! In the National Museum can be seen several of the most valuable of the manuscripts of the Corvina, sent back by Sultan Abdul Hamid I.

The great poets of Hungary are not forgotten by the sculptors; among them are Petöfi and Arany, pronounced Paterfee and Aurann. Petöfi it was who stirred the souls of the people in the great awakening times of last century, and he was killed fighting for freedom. It was Arany who sang so grandly the old legends of the Huns, of the Christian struggles against the Turks, and who translated Shakespeare so beautifully. We make our way out to the cemetery to lay flowers on the grave of the great leader, Louis Kossuth, who knew our great-grandfathers at home. Statues of him abound all over Hungary as do those of Count Széchenyi—which is pronounced Saicheny—who did good to his country in countless ways.

It was Francis Deák—pronounced Dayaak—who arranged the important details which, in 1867, brought final peace between Austria and Hungary. Statues of many of the patriots whom Hungary can never forget are placed in the streets and squares. Especially we notice the "Honvéd" memorials, of which there are so many, dedicated to the brave National Guard, which did such fine service in the middle of last century when the closing scenes of the great fight for independence were being successfully played out.

THE LIFE OF THE PEOPLE IN COUNTRY AND TOWN

The Millennium memorials are also scattered everywhere. They bring to mind the thousandth anniversary of the existence of the Hungarian nation. A great festival was held in 1896 to celebrate not only the dash over the Carpathians a thousand years before and the fact that the sacred heritage of freedom in constitution, laws, and government had been successfully handed down through the centuries, but to celebrate also the advance in education and in reforms for the good of the people which have followed in the wake of peace.

We are very unwilling to leave Budapest, for there is much to see, so many museums and fine excursions; but nearly all Hungary still lies before us, and a rest on our steamer will be welcome as we pass by the river into the great plain, the very soul of the country. Far away it stretches till it meets the edge of the great dome of sky on the round horizon. As we pass along southward, there are endless variety and interest in the scenes before us. The countryfolk look gay in their national costumes; the great fields of waving grain remind us that Hungarian flour is excellent; the marshy swamps and high embankments speak of the overflowing of waters, and the great skill of the Hungarians in regulating their flow. At Mohács we see women peacefully washing their clothes at the riverside, and fetching water in jars hung on a sort of yoke on their shoulders. The field of Mohács is a dread name in Hungarian ears, for it was there that the king, the nobles, and nearly all their followers, perished in deadly fight with the Turks, who then rushed triumphantly on over their dead

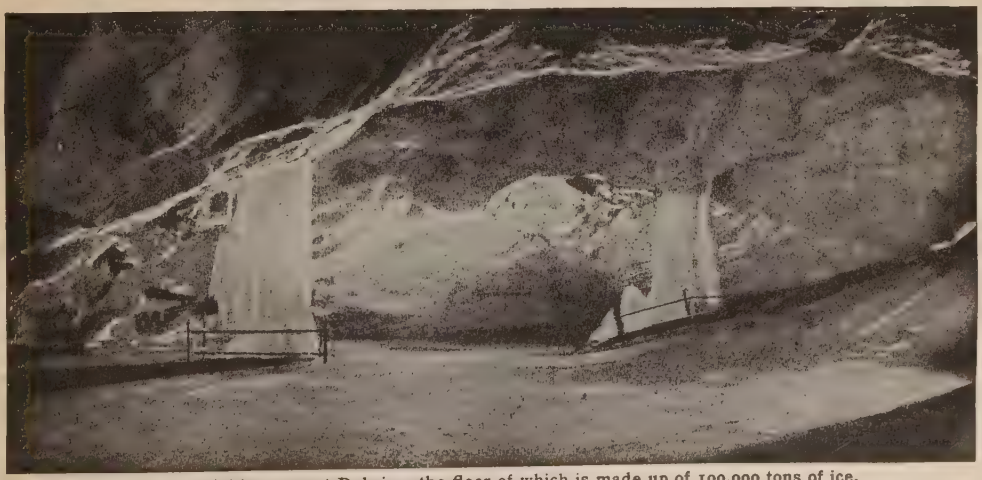
THE MOUNTAINS AND SEAPORT OF HUNGARY



Fiume, on the Adriatic Sea, which was once Hungary's seaport.



A Typical Hungarian village, showing the stern Carpathian Mountains beyond.



A wonderful ice cave at Dobsina, the floor of which is made up of 100,000 tons of ice.

bodies to Buda. About a century and a half later another battle was fought at Zenta, which put an end for ever to the hated rule of the Turks.

At the Key of the Danube

We feel special interest in the junction of the canals, made to shorten the winding of the river, and to cut across the plain between the Danube and the great—wholly Hungarian—River Theiss, as long as the Rhine. The Theiss's slow waters, which drain, with many windings, the great plain and the Carpathians behind, join the Danube from the north after it has turned eastward. The Drave and the Save come from the west, bearing the waters from the cold, snowy Alps.

The Save joins the Danube at Belgrade, the capital of Servia. The hills above the city have looked down on many conflicts since the first fortress was built twenty-two centuries ago on the rocky ridge that juts out between the two rivers. It was long looked upon as the "key" to the Danube, and the city has changed hands many times. It was finally given over by the Turks to the Servians in 1866. It was made the centre of the Servian government and flourished and grew rapidly until, in the Great War it was almost destroyed by the Germans, Austrians and Hungarians.

The Iron Gate of Mighty Rocks

The way gets more and more exciting and wonderful the farther we go. Now the bed of the river is wide and shallow like a large lake, now it is narrowed between steep rocks. Beautiful valleys open up on either side as the rivers hasten to join the main stream, often with the roar of cataracts. We feel quite afraid lest we run against the black rocks standing up from the bed of the river.

When we come to the Kazan Pass we are overwhelmed with the nearness of the steep mountain-sides reflected in the dark water beneath, and with the cliffs and their waterfalls, on which rainbows shine in the sun. Too soon we are out of the pass and at the town of Orsova, near which Kossuth buried the crown. A little way beyond. Orsova is the famous Iron Gate of mighty rocks, and the canal through which the ships, with their black smoke, pass. We can hear the roar of the water through the gate afar off. There are many remains of Roman days scattered up and down Hungary, but none more impressive than the remains of the tremendous works of road-making they achieved about this part of the Danube. Hungary undertook the enormous work of removing the great dangers of the Iron Gate, and making it fit for the shipping of Europe to pass through. The work took eight years, and was opened for traffic in the millennium year.

We would fain linger in Erdèly, the "forest-land" called Transylvania on our maps, (since the Great War joined to Rumania) that beautiful country of mountain and wood often spoken of as the Hungarian Switzerland, for we love pine forests, caves, old towns, and beautiful embroideries; and we would like to visit Kolozsvár, the birthplace of King Matthias.

The People of the Plain

But the great plain calls, and for days we move from place to place, by train, and by alarmingly rapid driving along tree-bordered roads, through rich fields and green woods, by towns and hamlets and farms, till we find ourselves at Debreczin, the capital of the Lowlands. It is a fine large town of about 100,000 inhabitants, and we are never tired of watching the people in their picturesque costumes, or of examining the delightful things to be bought in the quaint shops.

The sympathetic and graceful hospitality of the people is a pleasant memory for life, and it all seems to fit in with the beauty of these boundless plains under the widest expanse of sky we have ever seen. The model farms are wonderful, and on our daily excursions we grow quite familiar with the sight of the herdsmen in their heavy frieze coats, with their lovely charges, the foals and horses, that, when startled, seem to fly like the wind. These herdsmen, riding as if one with their steeds, are the last remnants of the original wandering Magyar folk who first settled in Hungary. They know no fear. Besides the horses, there feed on the plains great numbers of cattle, some of the beautiful milky-white kind with wide-spreading horns, whose ancestors came into the country

TYPES OF THE PEOPLE OF HUNGARY



A HUNGARIAN SHEPHERD OF THE LOWLANDS IN HIS CURIOUS FUR CLOAK



PEASANT GIRLS OF THE HIGHLANDS



LOWLAND GIRLS IN HOLIDAY COSTUME



FARMERS WEARING THE ORNAMENTAL CLOAK WHICH IS THEIR NATIONAL COSTUME

with the Magyars. There are also herds of shaggy black buffaloes, and flocks of lovely black and white sheep.

THE CHARM OF A THOUSAND-YEAR-OLD LIFE

As we go along, we feel it almost sad to see the wide, grassy plains growing less as more and more land is ploughed and sown, and to note how often the sound of the tinkling cattle-bell, the crack of the herdsman's whip are drowned by the shrill whistle of the train. But there is still much left of the charm of a thousand-year-old life. It is only here and there that the smoke of tall factory chimneys spoils the delicious, bright, clear air with its scent of grass and meadow flowers, and the people have still the old-time virtues of hospitality and love of Nature. The great enjoyment of the evenings is listening to the soul-stirring legends and poetry of the plains, and to the thrilling gipsy music which accompanies the slow and fast dances which make gay the leisure time of the peasants, when labor is done.

We cannot leave Hungary till we have had at least a glance at the Carpathians, so we make our way northwards, past the vine country on the slopes of the low hills, past the ore hills, where furnaces and smoke in many mining towns and villages mark the doorways into Mother Earth's rich storehouses.

CAVES, MOUNTAINS, FORESTS, AND LAKES

We must turn aside to visit the marvelous ice cave of Dobsina, where we can skate on a vast real ice floor as smooth as a mirror in the hottest weather, surrounded by walls and roof of glittering, dazzling, unearthly beauty. Wonderful, too, is the stalactite cave. Five hours is all too short a time in which to see the halls and arches, the columns and pillars, all wreathed in the finest traceries of lace in stone.

At last we arrive at the High Tátra district. It is not unlike Switzerland, but there are no glaciers, no magnificent, absolutely still and frozen solitudes. The mountains are not high enough for that. But we mount the High Tátra by cog-wheel railways, and gaze far and wide at glorious views over jagged hills and valleys, over countless "eyes of the sea"—the little mountain tarns—over splendid forests. There are fine hotels at the many health resorts in the district where people come from all over Europe to enjoy these delights, to boat on the lovely Lake Csorba, to drink the mineral waters, take the baths, and fill their lungs with the pure, life-giving air. Winter sports are skating, tobogganing, skiing in bright, still sunshine under a blue, cloudless sky.

It is but a short railway journey from the Tátra to Budapest, where we look round the museums again, for we want to look at the cowboy group again, and at specimens of the ores from the mines, and many prehistoric and Roman remains from spots we have visited. Then we say a too brief good-bye to St. Gellert, to St. Stephen, to John Hunyadi, to Széchenyi—often called the greatest Hungarian—and his fellow-heroes; and we spend our last days in Hungary on the shores of Lake Balaton, the largest inland sea of Central Europe. Delightful talks we have here with our Hungarian friends, as we watch the green-blue colors changing on the smooth mirror of the lake, the lights on the opposite hills, the children playing on the sandy shores, the glowing, dusky sunsets, the gleaming moonlight.

And every now and then, as we talk and dream on the shores of this great lake, we hear the melting strains of a gipsy band. We listen to the ancient tunes, dreamy Rumanian airs or fiery "czardas" of the Hungarian, and wonder where the gipsies came from in the far-off days of the past,—this people who have no country and travel through the land. They were the minstrels of Eastern Europe, in earliest times, and the gipsy woman was always famous for her charms and witchcraft. Wherever we find them we see the same flashing eyes and lustrous white teeth, the same dash and brilliancy which lends such vivid color to the picture.

Hungary now is torn with the effects of the Great War. During that struggle it lost much blood and treasure, and the bond with Austria was broken. Much disorder has followed the attempt of the people to set up a government, and other states have claimed much of the former territory, leaving Hungary much smaller. The final boundaries cannot be fixed for years to come.

THE NEXT PART IS ON PAGE 5841.



WOLF CUBS BEING NURSED AT THE ZOO BY A FINE RETRIEVER DOG

THE LIFE OF YOUNG ANIMALS

CONTINUED FROM 5577



WE are all pretenders—men, women, children, and animals. We dislike our work or our lessons only because they *are* work or lessons. The paid gardener often wearies of gardening because he is paid to do it as work, but with what joy those of us whose duty lies in other directions take up spade and fork and hoe, and do our share towards making the garden beautiful! Gardening is play to us, because we are not compelled to do it. How we love a game at tennis or croquet on a broiling summer's day, yet how badly we should feel ourselves treated if we *had*, as a matter of duty, to play tennis or croquet in hot weather! The things which we do for fun are just as hard as those which we have to do as duty, but because we may please ourselves as to whether we do them or not, we enjoy them.

It would seem that Nature knows this weakness in our character just as well as we ourselves know it, for she teaches the humbler members of her family to act as we act. The babyhood of many animals is much like our own. Baby animals have to be taught by their parents as we have, but their training is given as play. Let us turn back for a moment to page 5506, and read again the story of the man who was caught by a tigress. We see that the great creature does not then and there eat him; she carries him to the jungle and calls her two babies to her, calms the fears which the sight of a man arouses, and does all she can to induce them to make a plaything of the unfortunate victim. It is a sort of kindergarten lesson for the baby tigers; they are taught a lesson in play. Now, that is the plan upon which many animals are taught when young. The very things which it will be necessary for them to do in after life in order to live, they learn from their parents in games. The wise parents are serious enough, no doubt, in their intentions; but the little ones cannot be serious, they take their lessons as if they were part of some game. They are only in real earnest when danger threatens, and they run to their parents for protection.



YOUNG WILD GOATS
One is feeding from a bottle

Grave naturalists who have studied wild life in scenes far removed from the paths of men have asked themselves the question, "Are animals happy?" and have come to the conclusion that they cannot be. Fear of starvation and fear of death by flesh-eating animals must, they think, be ever present in the minds of vegetable-feeding animals and make their lives miserable. We may comfort ourselves with the belief, however, that this unhappiness, even if it really exists in the adult animals, does not affect the young ones. To them life must seem happy enough. They are taught to avoid dangers, but their lessons are taken in their play-time, and the art of concealing themselves cannot seem a much more serious matter to them than is a game of hide-and-seek to us. Nearly all animals are quite helpless when born. The fierce creatures which, when they grow up, destroy other animals, are as feeble as newly-hatched pigeons, and need as much attention as one of our own babies. As soon as the teeth of young lions or tigers begin to grow and they are able to bite, their parents bring them the bodies of animals upon which they begin their task of feeding themselves.



YOUNG TIGER CUBS PLAYING

They are taught to "worry" the flesh; they gambol and play with it, and bite it in fun, as a puppy will bite the slippered toe stuck out by ourselves to tease him. They are encouraged to do things which sharpen their teeth and claws and make them bodily strong. Wolves and foxes are taught to hunt.

There are many stories of children having been carried off and brought up by wolves. Nobody can say whether these stories are true, but as so many such stories exist, men have tried to account for them, and they think that, if such a thing ever has happened, it has come about in this way. A mother or father wolf, seeing a baby child left unguarded, has snatched it up and carried it home to its little ones. The mother wolf has not been hungry at the time, and the little ones required only milk for their meal, which their mother supplied. The child has therefore dropped down among the baby wolves, and, unconscious of its danger, has struggled to the side of the mother wolf and managed to get itself fed by her in the same way as the baby wolves. Then, food being plentiful in the neighborhood, there has been no need for the mother or father wolf to eat the child. The latter has become the plaything of the baby wolves, who have come to look upon it as one of themselves, while the mother wolf grows used to regarding it in the same way. In that manner the child grows up as much like a wolf as a child can be. Lord Wolseley says that when he was in India he heard many stories of children being stolen and reared by wolves, and he believed it to be a fact that such a thing has happened. If so, he thought, then the legend of Romulus and Remus, the founders of Rome, having been nursed by a wolf may, after all, be true.

Italians do not doubt the story, and in Rome a caged wolf is always kept in state to commemorate the event. The editor of this book was very much scared when, late one night, as he wandered through Rome, he stumbled by accident on the lair of the wolf kept by the Romans to-day in commemoration of the wolf which is said to have nurtured the founders of the Eternal City. The young of flesh-eating animals are taught, when at play, to practise the arts which may one day be necessary to enable them to grapple with their prey. Notice the frolics of two kittens. They crouch, and creep, and spring upon one another, and ply teeth and claws in their happy sport. But picture those same kittens a few months



MOTHER AND BABY KANGAROO

older; fancy the bites and scratches they now give as being given in earnest, and we see that here in play are the very movements which, in time to come, they will give in earnest, when some living animal has to be captured for food. The animals which do not eat others are taught when young to avoid other animals and the dangers which may spring from them.

Let us watch a mare and her foal in a field. The staid and sedate adult animal has no desire to go frisking about the pasture, but, suddenly, with a low whinny to her baby, she will fling her head high, kick up her heels, and gallop away, rearing and plunging and swerving as she goes with her baby bounding like a thing of india-rubber after her. It is an old instinct which is driving the mother to act in this way. She comes of a species which long ago was hunted by wild men and by wild animals.



JAPANESE APE AND BABY

In those days the life of a horse depended upon its power to gallop swiftly and to start aside from hidden danger. And that is what the mother is teaching the foal to do to-day as they both course so gaily and joyously over the meadow.

As we all know, the pace of a coach depends upon the speed of the slowest horse in the team. The same rule applies to the speed at which wild animals, moving in troops or herds, can travel. The animals which are full grown may be able to gallop like the wind, but the young ones cannot. Therefore, they must have some means of escaping animals who prey upon them, or their species would be exterminated. So the fawn is taught a really clever ruse. Should an enemy approach, the fawn darts off like a flash to a point seventy or eighty yards or more away, and there drops down, and lies close to the ground, with its long neck outstretched. The mother, seeing the young one hiding, then bursts away in the opposite direction. She will even limp, pretending to be lame, so that the animal which is seeking food will follow her in the expectation of easily overtaking her.

But once she has lured the enemy well away from her little one, she bounds swiftly beyond its reach, and then, all in good time, when the danger is past, she can return and find her fawn. The English hares are taught to do something of the same sort. At the least sign of danger they crouch flat upon the ground, and so much is their fur like the ground upon which they lie that an eye much better than that of a townsman is required to detect them. A young rabbit learns to sprawl flat when threatened, and the funny thing is that tame rabbits will do exactly the same thing, though their color may be of no use for hiding them where they lie. It is easy for animals like these to crouch and hide, but it is a different matter for creatures like kangaroos and wallabies. The young of the kangaroo remind us of the young crayfish or the young lobster in the manner in which they flee to their mother for protection in the hour of danger. The mother lobster or mother crayfish, seeing danger coming, gives a warning shake with her claws, and the little ones scuttle under her body, and hide beneath her, like chicks called by the alarm-cluck of their mother. The young kangaroo also has to depend upon the help of its mother for security. But the kangaroo mother is not content merely to hide her baby, as the lobsters and crayfish hide theirs. She receives her little one into her pouch, and then away she bounds, carrying the little one with her. The baby kangaroo pops his perky little head over the edge of his soft and furry cradle, and smiles, secure from danger, if baby kangaroos do smile. Kangaroos are not the only young



MULE, WITH DWARF DONKEY AND HER BABY

animals which, when young, enjoy the privilege of being carried without having paid their fares. All the babies of the animals which we call marsupials enjoy the same good fortune. The marsupials are those animals which have this special pouch in which to carry their young about when they are growing up. But often enough the mother marsupial, if she be, say, a crab-eating opossum, must feel like the old lady who lived in a shoe, for she, too, has so many children that she cannot tell what to do to carry them all in the manner in which the mother kangaroo carries her family. Well, the opossum possesses something which the kangaroo has not. It has what, for the moment, we will venture to call a tree-climbing tail. The kangaroo has a tail of another kind, which acts as a prop when the animal sits up; and we have only to watch a couple of baby kangaroos at play to see another purpose which this tail can be made to serve.

While sitting up, they suddenly rise upon the thick part of the tail, and strike out in play at each other with their hind feet. It is well that it is in play. When they grow older they may have to use the same trick in real earnest, but then they will strike out with their powerfully armed hind claws, not at each other, but at man or dog, and tear either very seriously. And the little tricks which they play with their fore paws come in time to serve serious ends. A big kangaroo chased into water by dogs will calmly seize an enemy and hold it under the water until it is drowned. To such ends do the tricks of the baby kangaroos lead.



FIVE EWES AND THEIR ELEVEN LAMBS

Now the tail of the opossum does not help it in this way. But it is like the tails of some of the monkeys—a sort of fifth hand or foot. As the opossum climbs a tree, this tail clings tightly round a branch and steadies the animal. The little opossums have little tails, and those who cannot ride in the mother's pouch, ride on her back, their tiny tails coiled tightly round hers. Thus they cling, as we ourselves cling by our hands to the straps in overcrowded cars and trains. The baby opossums are Nature's "strap-hangers."

Having mentioned the use which the New World monkeys make of their tails, we must remember how devotedly the mother monkey carries her baby about when it is not yet old enough to run quickly. Now and again she will support the little one with one arm, but she soon teaches it to cling tightly to the hair with which her body is covered, so that when she flees from peril she may have all four limbs at liberty. The baboon mothers and fathers encourage their little ones to play and become active, but when the little ones quarrel, as they often do, father baboon will step up, give the quarrelsome ones a good spank, and retire with all the satisfaction of a parent who has discharged a painful but necessary duty.

Some of the great apes—which are said to be not very cleanly in their habits—are a good deal cleaner than they are pictured, for they carry their babies down to stream or river, and teach them the blessed art of washing themselves. The little apes at first do not like it, but if they knew natural history as well as children know it, they might say: "You need not wonder that we do not like the water when even little seals and other water animals do not." For that is the fact. The baby seals are very unwilling to enter the water at first, and their patient, affectionate mothers have to persuade them to take to the sea in which they are afterwards to make their home. Young otters, among the finest of all swimmers in this country, have to be taught to trust themselves in the river, just as the young swallows and the young eagles have to be taught to fly.

It is hardly correct to say that youthful beavers have to be taught to do their work, but, at any rate, we do know that they begin by very easy stages, and that not until the summer, during which they have been romping in the woods near the water, has nearly gone. They are then brought back from the woods to the river home, and while mother and father are hard at work, laying up a winter store of food, and making the home snug and safe for the cold days, the little ones play at



A CONGO MARSH BUCK AND YOUNG
The baby is four weeks old.



A MOTHER ZEBRA AND FOAL
The foal is one week old.

being busy, nibbling twigs, carrying them to and fro, making glorious mud-pies, and patting bits of them on to the dam, or the family home. They doubtless think it all fine fun, but their play is the real preparation for the work of their lives.

We have all seen lambs at play in the fields, but it is finest to see them on the hills, where they skip and leap about the rocks just like bouncing balls. Perhaps it does not occur to us that in this play, which their mother quietly watches, they are practising for the day when, in deadly struggle, they may have to contend with other sheep. Calves are never very playful, but they have to learn their lessons, whether they do it in fun or in earnest, for there are deadly weeds in our fields which they must avoid. A young tiger would quickly discharge from its throat any poisonous substance which it might have swallowed; but the calf has a series of four stomachs, and cannot so easily rid itself of poison, hence it has to be very careful, or its mother has to be very careful for it. Wild animals are less likely to be poisoned than domestic animals, but they have their dangers, and the little camel which we see in the picture, though it is very young, would, if left out in the wilds, probably manage to steer clear of poisonous weeds. That would depend, however, upon whether it were in the place to which its parents belonged in their free state. For we know that camels taken to a strange part of Africa died in great numbers, from eating weeds which the native camels all avoided. The chief concern of the young rhinoceros is to avoid being drowned in the water to which its parents take it to drink, or from being smothered



YOUNG HIPPOPOTAMUSES 20 MONTHS OLD

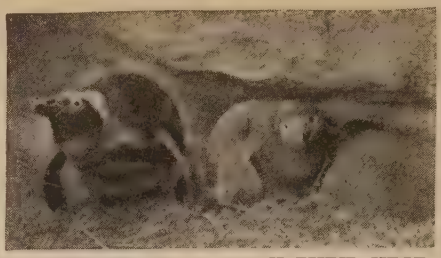


A BACTRIAN CAMEL AND ITS BABY
The young camel is five weeks old.



A YOUNG ELEPHANT LEARNING TO BEG
The elephant is two years old.

in the mud in which they love to roll. It must learn also to lead the way by safe paths to and from the home in the reeds or in the depths of the jungle when feeding and drinking and bathing are over — for in many instances it is the baby rhinoceros which heads the march on these trips. One other thing it must learn, too — to tell by the power of its nose what animals or men are in the neighborhood. And it does it; it can tell when a man is hundreds of yards away—not by sound, but simply by smelling him. The young hippopotamus has to go through much the same sort of training, but he has to be much more expert in the water, for is he not the young "river horse"? Both he and the rhinoceros display the warmest affection for the mother, and if the latter be killed, the little one will not leave her, but remains to mourn until it is either shot or dragged away from the spot by ropes.



A PENGUIN AND BABY IN THEIR NEST
The baby is ten days old.

The most interesting of all the big babies is the baby elephant, which is as affectionate as a baby hippopotamus, but more clever. If men catch a young elephant, they can train it to do things which seem almost human; but the mother elephant is perhaps an even better trainer of her baby. Take the case of a baby elephant which had sustained a bad injury to its head. It was like a cross child with a sore finger; could not bear to be touched, and ran away in fury if anybody tried to cure it. This could not go on, for the wound was a bad one, and the young elephant's life was in danger, so the keeper talked to the baby elephant's mother, and this clever creature understood what he wanted.



A GIRAFFE AND HER BABY
The baby is ten months old.



YOUNG POLAR BEAR AT THE ZOO
The bear is four months old.

She quietly seized her baby with her trunk, and forced it down upon its knees, holding it there while a doctor cleaned and dressed the wound; and this was repeated every day until the little one was quite cured. Baby giraffes and zebras are not educated in this way. They are taught to avoid man just as they are taught to avoid the lion, the hyena, and the jackal. But, if they do happen to be caught, they are treated with great kindness, and live happily in our zoo or in similar gardens elsewhere. There are no lions or hyenas to kill them there. They are much too well looked after for that. The keepers in the zoological gardens, who look so very stern and solemn, and who sometimes frighten tender-hearted children by telling them not to give pea-nuts to tigers and chocolate cake to the seals, are on certain occasions—when no one is looking—as gentle as women to their charges. You ought to see them when a baby is born in a zoo—not a little pink, fat, ten-toed, fluffy-headed human baby, but a baby with claws and whiskers, or a baby with a trunk of a nose, or a baby with hairy body and a great, long, hairy tail. A new baby in a zoo turns all the stern-faced keepers into beaming nurses. The creases come out of their faces, the frown disappears from their brows, their cheeks expand, their lips smile, their eyes melt with pleasure, they need only cap and apron and a sewing-box to look exactly like your own nurse. The angel in a zoo is the last-born baby. It turns the place into heaven. The keepers cluck to it, cuddle it, play with it, feed it, and try to comfort it when it is cutting its teeth.

THE NEXT STORY OF NATURE IS ON PAGE 5745.



READING

MEANING OF COMMON ABBREVIATIONS

CONTINUED FROM 5392

IN our reading we often see contractions, or initial letters, which we know stand for something. We may not know what they stand for, and, consequently, miss their meaning. On this and the following pages are given the contractions that we frequently meet with in our reading.

A

A1. The principal use of this expression is for ships. At Lloyd's a ship that is classed as A1 is a ship that is almost new or is as good as new. The A refers to the quality of the hull, and the 1 to the anchors, cables, and stores. The expression has now come to be used for anything that is very good. If we say that we feel A1, we mean that we feel in the very best of health.

A.B. Able-bodied seaman—a sailor who is no longer an apprentice, and is not an officer.

A.B. Bachelor of Arts.

A.D. In the Year of Our Lord. Taken from the Latin words *Anno Domini*. Our system of numbering the years is the Anno Domini system, and 1910 A.D. means the year 1910, reckoning the year of Christ's birth as 1.

Ad. or Advt. Advertisement.

A.D.C. Aide-de-camp, an army officer who carries orders to and from a general on the field of battle.

Æ. or æt, Aged, from the Latin word *ætatis*, meaning of the age. Charles Jones, æt. ten years, means Charles Jones, ten years of age.

A.H. The Mohammedans reckon their years from the Hegira, or the flight of Mohammed from Mecca to Medina, in 622 A.D. The letters stand for *Anno Hegiræ*. Latin word *anno*, meaning "in the year," and the Arabic word for "flight." When the Mohammedans speak of the year 1287 A.H., they mean the same year as we do when we speak of 1909 A.D.

Ala. Alabama, one of the states of U.S.A.

Ald. Alderman.

A.M. Before noon. The letters represent the Latin words *ante meridiem*.

A.M. In the year of the world. The letters represent the Latin words *anno mundi*. The Jews reckon the years from the time the world was supposed to have been created, which was 3760 B.C. The Jewish year 5669 A.M. is the same as 1909 A.D., but the Jewish year begins on September 26 instead of on the following January 1.

A.M. Master of Arts, from the Latin words *artium magister*. See M.A.

Anon. Anonymous.

A.O.F. Ancient Order of Foresters.

App. Appendix.

A.R.A. Associate of the Royal Academy (London).

Ariz. Arizona, one of the states of U.S.A.

Ark. Arkansas, one of the States of U.S.A.

A.R.S.A. Associate of the Royal Scottish Academy or Associate of the Royal Society of Arts.

A.R.S.L. Associate of the Royal Society of Literature.

A.T.S. American Tract Society.

A.U.C. The letters stand for the Latin words *ab urbe condita*, from the building of the city—that is, Rome.

A.V. Authorized version of the Bible.

B

B.A. Bachelor of Arts. The letters stand for the Latin words *Baccalaureus Artium*.

B.C. Before Christ. The years before Christ are reckoned backwards, so that the year 1 B.C. was one year before the birth of Christ, and the year 200 B.C. was 200 years before the birth of Christ.

B.C.L. Bachelor of Civil Law.

B.D. Bachelor of Divinity.

B.L. Bachelor of Law.

b.l. Bill of Lading.

B.M. Bachelor of Medicine. The letters are also used to mean British Museum.

B. Mus. Bachelor of Music.

B.Sc. Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus*.

Bt. or Bart. Baronet.

bu. Bushel.
bx. Box.

C

C. The Roman numeral for 100, from the Latin *centum*, a hundred.
C. Centigrade. The markings on the French or decimal thermometer. It is so called from the Latin *centum*, a hundred, and *gradus*, a step, because from freezing to boiling point is divided into 100 degrees. The American system of thermometer marking is the Fahrenheit, which is usually written F. or Fahr. It is so called after Fahrenheit, the scientist who invented it.
C. Centime. A French coin, five of which are about equal to one cent.
c. About. Latin *circa*.
Cal. California, one of the states of U.S.A.
Cap. Chapter, from the Latin *caput*, the head.
C.B. Companion of the Order of the Bath.
C.B. Confined to barracks.
C.B. Cape Breton, a part of Nova Scotia in Canada.
C.C.N.Y. College of the City of New York.
C.D.S.O. Companion of the Distinguished Service Order.
c.d.v. Carte-de-visite.
C.E. Civil Engineer, Christian Endeavor, or Children's Encyclopædia.
Cf. A contraction of "confer" and used in the sense of *compare*. In bookbinding cf. means calf.
C.F.I. A commercial expression meaning cost, freight, and insurance.
C.G. Captain-general, commissary-general, consul-general, coastguard, or captain of the guard.
Ch. Chapter. In music, choir-organ.
Chic. Chicago.
C.J. Chief Justice.
C.I.E. Companion of the Order of the Indian Empire.
C.M. Master of Surgery. The letters stand for the Latin words *Chirurgiæ Magister*.
Cm. Centimetre, the French measurement.
C.M.G. Companion of the Order of St. Michael and St. George.
C.O. Commanding Officer.
C/o. Care of.
c.o.d. Cash on delivery.
Colo. Colorado, one of the states of U.S.A.
Conn. Connecticut, one of the states of U.S.A.
C.O.S. Charity Organisation Society.
C.P. Court of Probate.
Cr. Credit or creditor.
C.S. Chemical Society.
C.S. Civil Service.
C.S.A. Confederate States of America.
C.S.N. Confederate States Navy.
C., or ct. Cent.
C.V.O. Commander of the Royal Victorian Order.
C.W.O. Cash with order.
cwt. Hundredweight, from c. for *centum*, a hundred, and wt. for weight.

D

d. Penny or pence. 2d. means two pence, and 1d. means one penny. The d. is for the Latin word *denarius*.
D.C. Repeat from the beginning. A contraction used in music, and standing for the Italian words *Da capo*. Also district of Columbia, in which is Washington, the capital of U.S.A.
D.C.L. Doctor of Civil Law.
D.D. Doctor of Divinity. The letters stand for the Latin words *Divinitatis Doctor*.
Del. Delaware, one of the states of U.S.A.
D.G. By the grace of God. The letters stand for the Latin words *Dei gratia*.
D.L. Deputy Lieutenant.
D.Lit. Doctor of Literature.
Do. Ditto, the same.
Dr. Doctor or debtor.
dr. Dram.
D.Sc. Doctor of Science. The letters stand for the Latin words *Doctor Scientiæ*.
D.S.O. Distinguished Service Order.
D.V. The letters stand for the two Latin words *Deo Volente*, meaning God willing.
dwt. Pennyweight. d. stands for the Latin word *denarius*, and wt. is a contraction for weight.

E

E. East.
E. & O.E. Errors and omissions excepted.
E.C. East Central, a London postal district.
Ed. Editor, or sometimes edition.
e.g. For example. The letters stand for two Latin words *exempli gratiâ*.
E.N.E. East-north-east—the point of the compass midway between the east and the north-east.
Eng. Engineer; Engineering; England; English.
E.R.I. Edward, King and Emperor, standing for the Latin words *Eduardus, Rex et Imperator*.
E.S.E. East-south-east, the point of the compass midway between east and south-east.
etc. Etcetera, meaning and others.
et seq. And the following.

F

F. or Fahr. The measurements of the Fahrenheit thermometer.
f. Farthing, florin, franc, foot, or fathom.
F. and A.M. Free and Accepted Masons.
F.B.S. Fellow of the Botanical Society.
fcp. Foolscap, a size of paper.
F.C.S. Fellow of the Chemical Society.
F.D. or Fid. Def. Defender of the Faith, from the Latin words *Fidei defensor*.
F.G.S. Fellow of the Geological Society.
fl. From the Latin word *floruit* meaning flourished.
Fla. Florida, one of the states of U.S.A.
F.L.S. Fellow of the Linnæan Society.
F.-M. Field-marshal.
fm. Fathom.
F.O. In music, full organ.
F.P. Fire plug, frequently seen on walls, indicating that there is a fire plug near that spot.
fr. Franc, the French coin.
F.R.A.S. Fellow of the Royal Astronomical Society or Fellow of the Royal Asiatic Society.
F.R.C.P. Fellow of the Royal College of Physicians.
F.R.C.S. Fellow of the Royal College of Surgeons.
F.R.G.S. Fellow of the Royal Geographical Society.
F.R.H.S. Fellow of the Royal Horticultural Society.
F.R.I.B.A. Fellow of the Royal Institute of British Architects.
F.R. Met. S. Fellow of the Royal Meteorological Society.
F.R.S. Fellow of the Royal Society.
F.R.S.L. Fellow of the Royal Society of Literature.
F.S.A. Fellow of the Society of Arts or Fellow of the Society of Antiquaries.
F.S.S. Fellow of the Statistical Society.
ft. Foot, feet, or fort.
F.Z.S. Fellow of the Zoological Society.

G

G. or gm. Gramme, the French weight.
Ga. Georgia, one of the states of the U.S.A.
G.B. Great Britain.
G.C.B. Knight Grand Cross of the Order of the Bath.
G.C.H. Knight Grand Cross of Hanover.
G.C.I.E. Knight Grand Commander of the Order of the Indian Empire.
G.C.L.H. Grand Cross of the Legion of Honor.
g.c.m. Greatest common measure.
G.C.M.G. Knight Grand Cross of the Order of St. Michael and St. George.
G.C.S.I. Knight Grand Commander of the Order of the Star of India.
G.C.V.O. Knight Grand Cross of the Royal Victorian Order.
G.F.S. Girls' Friendly Society.
gm. Gramme.
G.M. Grand Master of Masons.
G.O. A term in music meaning great organ.
G.P.O. General Post Office.
gr. Grain.
gs. Guineas.
gu. Guinea.

H

H.B.M. His or Her Britannic Majesty.
H.C.M. His or Her Catholic Majesty.
H.E. His Eminence; His Excellency.
H.H. His or Her Highness.
H.I.H. His or Her Imperial Highness.
H.M. His or Her Majesty.
H.M.C. His or Her Majesty's Customs.
H.M.I.S. His or Her Majesty's Inspector of Schools.
H.M.S. His or Her Majesty's Ship. His or Her Majesty's Service.
H.P. Half pay.
h. p. Horse power.
H.R. H'se of Representatives.
H.R.E. Holy Roman Emperor or Holy Roman Empire.
H.R.H. His or Her Royal Highness.
H.R.I.P. Here rests in peace. The letters stand for the Latin words *Hic requiescat in pace.*
H.S.H. His or Her Serene Highness.
H.S.S. Fellow of the Historical Society. The letters stand for the Latin words *Historiæ Societatis Socius.*

I

I. Idaho, one of the states of U.S.A.
Ia. Iowa, one of the states of U.S.A.
Ib. or Ibid. In the same place, standing for the Latin word *Ibidem.*
I.C.E. Institute of Civil Engineers.
I.C.S. Indian Civil Service.
Ida. Idaho, one of the states of U.S.A.
I.D.B. Illicit diamond buying.
i.e. That is. The letters stand for the Latin words *id est.*
I.H.S. Jesus, from the first three letters of the name when written in Greek capitals. It is sometimes erroneously supposed to stand for *Jesus Hominum Salvator*, three Latin words meaning Jesus, Saviour of men.
Ill. or Ills. Illinois, one of the states of U.S.A.
I.M.S. Indian Medical Service.
in. Inch or inches.
Incog. From the Italian *incognito*, meaning unknown.
I.N.D. In the Name of God, standing for the Latin words *In Nomine Dei.*
Ind. Indiana, one of the states of U.S.A.
Ind. T. Indian Territory, a former district in U.S.A.
Inf. From the Latin *infra*, meaning below.
I.N.R.I. Jesus of Nazareth, King of the Jews. The letters stand for the Latin words *Iesus Nazarenus Rex Judæorum*, which were written above the Cross. J and I are the same letters in Latin.
Inst. From the Latin *instante*, meaning current.
Io. Iowa, one of the states of U.S.A.
I.O.F. Independent Order of Foresters.
I.O.G.T. Independent Order of Good Templars.
I.O.U. I owe you.
I.R. Internal Revenue.

J

J.H.S. The same as I.H.S.
J.P. Justice of the Peace.
Jr. or Jun. Junior.
J.U.D. Doctor of Canon and of Civil Law. The letters stand for the Latin words *Juris Utriusque Doctor.*

K

Kan., Kans. Kansas, one of the states of U.S.A.
K.B. Knight of the Bath or King's Bench.
K.C. King's Counsel.
K.C.B. Knight Commander of the Order of the Bath.
K.C.I.E. Knight Commander of the Order of the Indian Empire.
K.C.M.G. Knight commander of the Order of St. Michael and St. George.
K.C.S.I. Knight Commander of the Order of the Star of India.
K.C.V.O. Knight Commander of the Victorian Order.
Ken. or Ky. Kentucky, one of the states of U.S.A.
Kg. Kilogramme, the French weight.
K.G. Knight of the Garter.
K.G.C. Knight of the Grand Cross.
K.G.C.B. Knight of the Grand Cross of the Bath.
K.G.F. Knight of the Golden Fleece.
K.H. Knight of the Order of Hanover.
K.L.H. Knight of the Legion of Honor.
Km. Kilometre, the French measure, equal to $\frac{5}{8}$ mile.
Knt. of Kt. Knight.
K.P. Knight of the Order of St. Patrick. Knight of Pythias.
K.S.I. Knight of the Order of the Star of India.
K.T. Knight of the Order of the Thistle. Knight Templar.
Kt. Bach. Knight Bachelor.
Ky. Kentucky, one of the states of U.S.A.

L

L. Lake, Book, Latin *liber.*
l. Latitude.
lb. Pound or pounds, from the Latin word *libra*, meaning a pound.
l.b.w. Leg before wicket.
l.c. lower-case.
L.C.B. Lord Chief-baron.
l.c.m. Least common multiple.
£E. Egyptian pound, which is equal to about $5.00.
L.H. In music means played with the left hand.
L.I. Light Infantry.
Lieut. Lieutenant.
Lim. or Ltd. Limited.
LL. B. Bachelor of Laws. The letters stand for the Latin words *Legum Baccalaureus.*
LL.D. Doctor of Laws. The letters stand for the Latin words *Legum Doctor.*
Lou. Louisiana, one of the states of U.S.A.
L.R.C.P. Licentiate of the Royal College of Physicians.
L.R.C.S. Licentiate of the Royal College of Surgeons.
L.S. Linnæan Society.
L.S.A. Licentiate of the Society of Apothecaries.

L.s.d. Pounds, shillings, and pence, from the Latin *libræ, soldi, denarii.*
Lt. or Lieut. Lieutenant.
£T. Turkish pound = $4.50.

M

M. 1,000, from the Latin *mille*, a thousand.
M. or Mons. Short for Monsieur, the French word for Mr.
M.A. Master of Arts.
Mass. Massachusetts, one of the states of U.S.A.
M.B. Bachelor of Medicine. The letters stand for the Latin words *Medicinæ Baccalaureus.*
M.C. Member of Congress.
Md. Maryland, one of the states of U.S.A.
M.D. Doctor of Medicine. The letters stand for the Latin words *Medicinæ Doctor.*
Mdlle. or Mlle. The French for Miss, being a contraction of *Mademoiselle.*
Mdm. or Mm. Madam.
Me. Maine.
M.E. Mining Engineer. Methodist Episcopal.
M.F.H. Master of Fox Hounds.
mg. milligramme.
M.I.C.E.or M.Inst.C.E. Member of the Institute of Civil Engineers.
Mich. Michigan, one of the states of U.S.A.
Minn. Minnesota, one of the states of U.S.A.
Mis. Missouri, one of the states of U.S.A.
Miss. Mississippi, one of the states of U.S.A.
Mlle. *See* Mdlle.
MM. Short for Messieurs, the plural of Monsieur.
M.M. Their Majesties.
Mo. Missouri, one of the states of U.S.A.
Mont. Montana, one of the states of U.S.A.
M.P. Member of Parliament.
M.P.S. Member of the Philological or of the Pharmaceutical Society.
Mr. Master or Mister.
M.R.A.S. Member of the Royal Academy of Sciences or of the Royal Asiatic Society.
M.R.C.C. Member of the Royal College of Chemistry.
M.R.C.S. Member of the Royal College of Surgeons.
M.R.C.V.S. Member of the Royal College of Veterinary Surgeons.
M.R.G.S. Member of the Royal Geographical Society.
M.R.I. Member of the Royal Institution.
M.R.I.A. Member of the Royal Irish Academy.
Mrs. Mistress.
MS. Manuscript. The plural is MSS.
M.S. Master of Science.
m.s.l. Mean sea-level.
M.S.S. Member of the Statistical Society.
Mus.B. Bachelor of Music.
Mus.D. Doctor of Music.

N

N. North.
N.A. North America; also National Academy.
N.B. Note well. The letters stand for the Latin words *Nota bene.* Also refers to North Britain, or Scotland, and to New Brunswick.
N.C. North Carolina, one of the states of U.S.A.
N.C.O. Non - Commissioned Officer.
N.Dak. North Dakota, one of the states of U.S.A.
N.E. North-east or New England.
Neb. or Nebr. Nebraska, one of the states of U.S.A.
nem.con. From two Latin words *nemine contradicente*, unanimously.
Nev. Nevada, one of the states of U.S.A.
N.F. Newfoundland.
N.H. New Hampshire, one of the states of U.S.A.
N.J. New Jersey, one of the states of U.S.A.
N.N.E. North-north-east, the point in the compass midway between north and north-east.
N.N.W. North-north-west, the point in the compass midway between north and north-west.
No. Number. It is short for the Latin word *Numero.*
n.o.p. Not otherwise provided.
N.P. Notary Public.
N.S. New style. See O.S.
N.S. Nova Scotia.
N.S.P.C.C. National Society for the Prevention of Cruelty to Children.
N.W. North-west.
N.W.T. North West Territories, in Canada.
N.Y. New York, one of the states of U.S.A.

O

O. Ohio, one of the states of U.S.A.
Ob. Died, standing for the Latin *Obiit.*
O.E. Old English.
O.F. Odd Fellow.
O.K. All correct, the origin of this is obscure. By some it is said to refer to "Old Keokuk," an Indian Chief, who signed treaties with the initials O.K.
Ont. Ontario, a province of Canada.
% Percent.
Ore. or Oreg. Oregon, one of the states of U.S.A.
O.S. Old style, referring to the Calendar before its change in Queen Anne's reign.
oz. Ounce. The z represents a curious character that was used in old manuscripts to denote an abbreviation.

P

p. Page; the plural form is pp.
Pa. Pennsylvania, one of the states of U.S.A.
P.C. Privy Councillor, police constable, or postcard.
P.E.I. Prince Edward Island.
Penn. Pennsylvania, one of the states of U.S.A.
Ph.B. Bachelor of Philosophy. The letters stand for the Latin words *Philosophiæ Baccalaureus.*
Ph.D. Doctor of Philosophy. The letters stand for the Latin words *Philosophiæ Doctor.*
P.M. Afternoon, standing for the Latin words *post meridiem;* postmaster or past-master. The letters also stand for *post mortem*, the examination of a dead body.
P.M.G. Postmaster-general.
P.O. Post office, patent office, or postal order.
P.O.D. Paid on delivery.
P.O.O. Post office order.
P.P. Parish Priest.
pp. Pages.
P.P.C. To take leave. The letters stand for the French words *pour prendre congé.*
P.P.S. Additional postscript, see P.S.
P.R.A. President of the Royal Academy.
Pro tem. From two Latin words *pro tempore*, meaning for the time.
prox. From the Latin *proximo*, meaning next.
P.S. Pharmaceutical Society or Philological Society.
P.S. Postscript—a part of a letter written after or below the signature of the writer, from the Latin *post scriptum.*
pt. Part, or pint.
P.T.O. Please turn over.

Q

Q.E. Which is. The letters stand for the Latin words *quod est.*
Q.E.D. Which was to be demonstrated. The letters stand for the Latin words *quod erat demonstrandum.*

Q.E.F. Which was to be done, standing for the Latin words *Quod erat faciendum.*
Q.M. Quartermaster.
Q.M.G. Quartermaster-general.
q.s. As much as will suffice. The letters stand for the Latin *quantum sufficit.*
q.v. Which see. The letters stand for the Latin words *quod vide.*

R

R. King or queen, from the Latin *Rex* or *Regina.*
R. Take, used in doctor's prescriptions, and standing for the Latin word *recipe.*
R.A. Royal Academy or Royal Artillery.
R.A.M. Royal Academy of Music.
R.A.S. Royal Asiatic Society.
R.C. Roman Catholic.
R.C.M. Royal College of Music.
R.C.S. Royal College of Surgeons.
R.E. Royal Engineers.
Rev. Reverend; also revise.
R.F. French Republic; for the French words *République Française.*
R.G.S. Royal Geographical Society.
R.H. In music, Right hand.
R.H.A. Royal Horse Artillery.
R.H.G. Royal Horse Guards.
R.H.S. Royal Humane Society, Royal Historical Society, or Royal Horticultural Society.
R.I. Rhode Island, one of the states of U.S.A.
R.I.B.A. Royal Institute of British Architects.
R.I.P. Rest in peace. The letters stand for the words *Requiescat in pace.*
R.M. Royal Mail or Royal Marines.
R.M.A. Royal Marine Artillery.
R.M.L.I. Royal Marine Light Infantry.
R.M.S. Railway Mail Service.
R.N. Royal Navy.
R.P.O. Railway Post Office.
R.R. Railroad.
R.S. Royal Society.
R.S.A. Royal Society of Antiquaries.
R.S.L. Royal Society of Literature.
R.S.M. Royal School of Mines.
R.S.O. Railway sub-office, a postal term.
R.S.P.C.A. Royal Society for the Prevention of Cruelty to Animals.
R.S.S. Fellow of the Royal Society. The letters stand for the Latin words *Regiæ Societatis Socius.* The letters S.R.S are also used.
R.S.V.P. Reply, if you please. The letters stand for the French words *Répondez, s'il vous plait.*
R.V. Rifle Volunteers or Revised Version (of the Bible).

S

S. Shillings. SS., Saints.
S.A. South Africa.
S.A.S. Fellow of the Society of Antiquaries. The letters stand for the Latin words *Societatis Antiquariorum Socius.*
S.C. South Carolina, one of the states of U.S.A.
Sc.B. Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus.*
Sc.D. Doctor of Science. The letters stand for the words *Scientiæ Doctor.*
s.d. Without day; indefinitely; a contraction for *sine die,* Latin.
S. Dak. South Dakota, one of the states of U.S.A.
S.E. South-east.
s.g. Specific gravity.
S.J. Society of Jesus.
S.M. The French form of his or her Majesty, standing for the French words *Sa majesté.*
S.P.C.C. Society for the Prevention of Cruelty to Children.
S.P.G. Society for the Propagation of the Gospel.
S.P.Q.R. The Senate and People of Rome. The letters stand for the Latin words *Senatus Populusque Romanus.*
sq. From the Latin word *sequens,* meaning the following.
Sr. Senior.
SS. Steamship.
S.S.E. South-south-east—the point of the compass midway between south and south-east.
S.S.U. Sunday School Union.
S.S.W. South-south-west, the point of the compass midway between south and south-west.
St. Street, saint, or strait.
S.T.B. Bachelor of Sacred Theology.
Sup. From Latin *supra,* meaning above.
S.W. South-west or senior warden.

T

Tenn. Tennessee, one of the states of the U.S.A.
Tex. Texas, one of the states of U.S.A.
T.S. Twin screw.

U

U.F.C. United Free Church of Scotland.
U.K. United Kingdom.
U.P. United Presbyterian.
U.S. United States, or United Service, *i. e.,* the Army and Navy.
U.S.A. United States of America: United States Army.
U.S.M. United States Mail, or Marines.
U.S.N. United States Navy.

V

V. Roman numeral for 5.
v. Against, standing for the Latin word *versus;* or see, standing for the Latin word *vide.*
Va. Virginia, one of the states of U.S.A.
V.C. Victoria Cross, vice-chancellor, or vice-consul.
Verm. or Vt. Vermont, one of the states of U.S.A.
v.g. For example, standing for the Latin words *verbi gratia.*
V.P. Vice-president.
V.R. Queen Victoria, standing for the Latin words *Victoria Regina.*
V.R.I. Victoria, Queen and Empress, standing for the Latin words *Victoria Regina et Imperatrix.*
V.S. Veterinary Surgeon.
Vt. or Verm. Vermont, one of the states of U.S.A.

W

W. West.
Wash. Washington, one of the states of U.S.A.
W.C. West Central, a postal district in London, England.
W.C.T.U. Women's Christian Temperance Union.
Wis. or Wisc. Wisconsin, one of the states of U.S.A.
W.N.W. West-north-west, the point in the compass midway between west and north-west.
W.S.W. West-south-west, the point in the compass midway between west and south-west.
wt. Weight.
W.Va. West Virginia, one of the states of U.S.A.
Wyo. Wyoming, one of the states of U.S.A.

Y

yd. Yard.
Y.M.C.A. Young Men's Christian Association.
Y.W.C.A Young Women's Christian Association.

THE NEXT SCHOOL LESSONS BEGIN ON PAGE 5865.

THE COUNTRY HOME OF JOHN MILTON



Milton's cottage at Chalfont St. Giles, where the poet went to escape the great plague.



Milton's first love—From the painting by G.H. Boughton, R. A.



John Milton as a boy, a youth, and a man.

JOHN MILTON AND HIS POEMS

CONTINUED FROM 5591

JOHN MILTON, whom good judges of books place next to Shakespeare among English poets, trained himself from boyhood to be a poet. Early in life he dreamed of writing something the world "would not willingly let die."

From a child he was an eager reader, a writer, and a rhymer. The hymn

> Let us with a gladsome mind
> Praise the Lord, for He is kind,

a paraphrase of the 136th Psalm, was written by Milton when he was fifteen, and before he was twenty he had produced much Latin verse, and was known at the University as a scholar and poet.

Milton's birth was nearly eight years before Shakespeare's death. He was born on December 9, 1608, at the Spread Eagle, Bread Street, off Cheapside, London, the very street in which stood the Mermaid Tavern, where Shakespeare met the friends who wrote plays with him.

Possibly before he was eight years old the studious boy, John Milton, may have seen Shakespeare pass down Bread Street to the Mermaid, on a visit from his country home.

In those days it was the custom for a man engaged in business to hang outside his door a sign by which his place of business could be easily recognized, and following this custom, Milton's father used the sign of the Spread Eagle. The older John Milton was a scrivener, that is to say he drew wills, prepared other documents, and in fact did much of the work that in our day is done by lawyers. He was a well-educated man of good family, who had prospered in his business, and was highly respected. He was an excellent musician, loved art and literature, and both he and his wife were deeply religious. Probably in all England there could not have been found a more delightful home than the one in which the future poet spent his boyhood. He had several brothers and sisters, but only two lived to grow up, a sister, Ann, who was several years older than he, and a brother, Christopher, who was several years younger, and who afterward became a lawyer.

John Milton's parents were proud of their handsome, gifted son, and had his portrait painted when he was ten years old. At this age too his education had been well begun. He had already been sent to a school in Essex, and now had a tutor at home. Two years later he went to St. Paul's school, which was noted for its teaching of Greek and Latin. At the age of sixteen he was ready for College. He chose Christ's College at Cambridge University, the same college which the

poet Spenser had attended, and there he spent seven years of deep study.

The handsome young Puritan, described by one who knew him as "a harmonical and ingenious soul in a beautiful and well-proportioned body," determined to be a pure-minded, good man, and to write great poems for distant generations. Noble poems, he felt, should be *lived* by the man who wrote them. The real beginning of Milton's poetry is a beautiful story. It was Christmas Eve in 1629, when he had just turned twenty-one. The starry night mingled in his heart wistful thoughts of his own God-given poetic gifts, and devotion to the Savior who on that night long ago "Our great redemption from above did bring," and these thoughts shaped themselves into an "Ode on the Morning of Christ's Nativity." The poet begins the consecration of his pen by asking:

Say, Heavenly Muse, shall not thy sacred vein
Afford a present to the Infant God?
Hast thou no verse, no hymn, no solemn strain
To welcome Him to this His new abode,
Now while the heaven, by the sun's team untrod,
Hath took no print of the approaching light,
And all the spangled hosts keep watch in squadrons bright?

See, how from far, upon the Eastern road,
The star-led wizards haste with odours sweet:
O, run, prevent them with thy humble ode,
And lay it lowly at His blesséd feet;
Have thou the honour first thy Lord to greet,
And join thy voice unto the angel-choir,
From out His secret altar touched with hallowed fire.

Then follows a hymn telling of the coming of the Babe to Bethlehem and the retreat of the false gods.

In 1632 he left Cambridge with the degree of M. A., and went to his father's country house at Horton, in Buckinghamshire, where five more years of his life rolled on in the study of books and Nature and the writing of poems which rank among the finest in the world.

Of the poems written during these years of training, "Arcades," a masque set to music by Lawes, one of the king's musicians, was a slight work suited to the open-air performances then fashionable. "Comus," another masque, performed at Ludlow Castle, and interspersed with songs, for which Lawes again made the music, is a beautiful poem showing how virtue may pass unscathed through temptation, a truth illustrated by Milton's own life. This is his testimony: "I take God to witness that I lived untouched from all profligacy and vice, having perpetually before me the thought that I could not escape the eyes of God."

"Comus" tells how a lady, pure of heart, is lost by night in a wood, and is met by an evil-minded magician disguised as a shepherd, who uses all his power to deceive her, but

No evil thing that walks by night,
In fog or fire, by lake or moonish fen,
Blue meagre hag, or stubborn unlaid ghost
That breaks his magic chains at curfew time,
No goblin, or swart fairy of the mine,
Hath hurtful power o'er true virginity.
So dear to Heaven is saintly Chastity,
That, when a soul is found sincerely so,
A thousand liveried angels lackey her,
Driving far off each thing of sin and guilt.

One of Milton's early poems, "L'Allegro," is descriptive of a man whose mind is inclined to thoughtful mirth; and another, "Il Penseroso," tells how a morning may pass when one is in a pensive mood. In each Milton is the man, and his mind is full of poetical thoughts, drawn from his reading of ancient and modern poetry and his observation of Nature.

A form of Milton's lovely gift of song was his way of using the sound and sway of words for the brighter or darker coloring of the thought he was expressing. Thus "L'Allegro" trips to its own gaiety; "Il Penseroso" has a statelier measure; and the third of Milton's earlier poems, "Lycidas," a lament for the death of a college friend who was drowned in crossing to Ireland, has a mournful sweetness that for ever haunts the reader. It was customary at Cambridge to write a poem on the death of a scholar-friend, and Edward King, the friend to whom Milton gives the poetic name of Lycidas, was himself a poet. Milton had written several elegies, but never before with the feeling shown in these lines that echo and re-echo beauty of tone.

Yet once more, O ye laurels, and once more
Ye myrtles brown, with ivy never sere,
I come to pluck your berries harsh and crude,
And with forced fingers rude
Shatter your leaves before the mellowing year.

TWO SCENES IN THE LIFE OF JOHN MILTON



Milton was the great thinker in the days of the Commonwealth, when Oliver Cromwell ruled England with a firm hand. Both men did imperishable service to their native land. The poet in those days could not have lived by his poetry, and he was employed to conduct the official correspondence of the country with foreign Powers in the Latin language, then used for that purpose. While so employed he lost his eyesight, and had to have a colleague in his work. This colleague was a fine poet and a man of upright character, Andrew Marvell by name. In this picture, by G. H. Boughton, R. A., we see Marvell shaking hands with the blind poet.



As Milton was blind during the last twenty years of his life, and in those years composed some of his greatest poems, including "Paradise Lost" and "Samson Agonistes," his daughters had to be his eyes and write down the words as he dictated them. In this picture by Munkacsy we see his daughters thus engaged, and perhaps unwillingly. For they grew tired of the laboring work which their father's blindness required of them, and in the later years of his life they behaved in an undutiful way, much to the sorrow of the great poet.

Bitter constraint, and sad occasion dear
Compels me to disturb your season due;
For Lycidas is dead, dead ere his prime,
Young Lycidas, and hath not left his peer.
Who would not sing for Lycidas? He knew
Himself to sing, and build the lofty rhyme.
He must not float upon his watery bier
Unwept, and welter to the parching wind
Without the meed of some melodious tear.
For we were nursed upon the self-same hill,
Fed the same flock, by fountain, shade, and rill,
Together both, ere the high lawns appeared
Under the opening eyelids of the morn,
We drove afield, and both together heard
What time the gray-fly winds her sultry horn,
Battening our flocks with the fresh dews of night,
Oft till the star that rose at evening bright
Towards heaven's descent had sloped his westering wheel.
But oh! the heavy change now thou art gone,
Now thou art gone, and never must return!
Thee, shepherd, thee, the woods, and desert caves,
With wild thyme and the gadding vine o'ergrown,
And all their echoes, mourn.

All this was formal according to the scholarly fashion of the times, but it was beautiful beyond all other formal English verse.

His mother's failing health had kept him at home, but when she died he set out to see for himself those wondrous towns and countries of the Continent whose stories and literature he knew so well. So for about fifteen months he wandered among the storied towns of Italy and France, and the influence of the classic scenes of Italy did much to shape his thoughts towards the later poetical achievements of his life. He made many friends, especially in Florence, and paid a visit to the famous Galileo, at that time an old man and blind. He had meant to spend a longer time in Italy, but the news of the political troubles in England called him home.

MILTON RETURNS TO LONDON ON THE EVE OF THE CIVIL WAR

When he returned to London in 1639 the struggle between the people and the king, which three years later resulted in the Civil War, had become so serious that the whole country was unsettled. Milton was a man of peace, and instead of taking part in this great agitation, except by writing a series of bitter attacks upon the bishops, he devoted himself to the quiet task of teaching, and had a sort of boarding-school for a number of years in Aldersgate Street. But the bitterness of the struggle which was going on in these unhappy days entered into the poet's life in a strange way.

He married a lady who belonged to a Royalist family and had been brought up with the gay manners of the Cavaliers, who were the opponents of the Puritans.

MILTON MARRIES A ROYALIST LADY BUT IS STAUNCH TO THE PURITAN CAUSE

As Milton was, in his ways of life, the gravest and most frugal of Puritans, it was not likely that his young wife could immediately find happiness with him, and after a few weeks she returned to her father; but two years later, when the fortunes of war had gone against the Royalists, and Mary Milton had learned that life is something more than dancing and merry parties, she returned to her husband, and even her father was glad to have the shelter of the poet's roof.

Milton, in the meanwhile, had been writing not poetry but prose, and his finest work of this period was entitled "Areopagitica." That is a Greek word for an oration addressed to the ancient Council of Athens, which was known as the "Areopagus," and Milton gave this title to his work because it was addressed to the Parliament of his own country. The "Areopagitica" is a noble plea for liberty of thought and especially the right to publish in print one's honest opinions, and is regarded as one of the finest examples of English prose writing. Another prose work of Milton's, in which he defended the execution of Charles I., had an important bearing on his life, for it was esteemed so highly by the Puritan Government that Milton was appointed Latin Secretary to the Council at a handsome salary. His work was to draft the correspondence of the Government with foreign Powers, which was then carried on in the Latin language.

THE SAD, SIGHTLESS DAYS OF THE CLOSE OF MILTON'S LIFE

A new period of the poet's life now began. Eminent in the public life of his day, his great literary powers were employed, not only in translating State correspondence, but in defending the Puritan Government against its critics on the Continent. In 1653 he was left a widower with three young daughters to look after; but the greatest trial of his life befell him about the same time.

A GREAT ARTIST'S VISION OF CREATION



Doré's picture of the creation of birds and sea animals in the childhood of the world.
This is one of the famous French artist's illustrations to Milton's "Paradise Lost."

His eyes, which had been weak from boyhood, now failed him completely, and by the year 1654 the poet was blind. Still he bravely faced his work as Latin Secretary, first with an assistant, and afterwards with the aid of a colleague, Andrew Marvell, who was himself a poet of great power, and a man of fine character. For the sake of his motherless children he married again, but his second wife died some fifteen months after the wedding; so that Milton's daughters were left without a mother's guidance, and in later years were a trial to their sightless father.

As the Protectorate drew to a close, Milton turned to the task of writing the great poem he had always meant to write, and probably it was fairly well advanced when the return of Charles II. caused the poet to hide from fear of his political enemies. They, however, allowed him to live in peace, and perhaps by 1653, certainly by 1655, "Paradise Lost" was finished.

The writing of "Paradise Lost" was, to Milton, a religious exercise. His aim was to "justify the ways of God to man," and he began by humbly asking the Divine Spirit to instruct him while he told of the fall of angels and of man. A spirit of profound reverence, which suits well the dignity of the blank verse, is preserved throughout. The tone of the poem is lofty, majestic, and pure.

No other poet has such power of imagination, creating scenes and beings beyond the reach of human experience, and giving them life, pictured in great words.

The great poem is written in what is known as epic form. It is based on scripture, and tells the story of the angels who fell from heaven, and the temptation and fall of man. Like all epics, it commences in the middle of the tale. The rebel angels, cast "with hideous ruin and combustion down to bottomless perdition," regain their steadfastness of mind in the midst of the fiery gulf. Satan, the great rebel chief, is the first to recover himself and make his way to the shore of the "inflamed sea." There he calls his hosts around him in orderly array, and Azazel, "a cherub tall," unfurls his mighty standard. Here is the picture of the bad, sorrowful angel as he prepares to speak to his downcast host of followers:

He, above the rest
In shape and gesture proudly eminent,
Stood like a tower. His form had not yet lost
All its original brightness, nor appeared
Less than an Archangel ruined, and the excess
Of glory obscured: as when the sun, new-risen,
Looks through the horizontal misty air
Shorn of his beams, or, from behind the moon,
In dim eclipse, disastrous twilight sheds
On half the nations, and with fear of change
Perplexes monarchs. Darkened so, yet shone
Above them all the Archangel. But his face
Deep scars of thunder had intrenched, and care
Sat on his faded cheek, but under brows
Of dauntless courage and considerate pride,
Waiting revenge.

This great chieftain of the underworld then speaks to his comrades in guilt and excites them to further war, but war by guile, against Man, that thereby God may be grieved.

"But these thoughts
Full counsel must mature. Peace is despaired;
For who can think submission? War, then, war
Open or understood, must be resolved."
He spake; and, to confirm his words, outflew
Millions of flaming swords, drawn from the thighs
Of mighty Cherubim. The sudden blaze
Far round illumined Hell. Highly they raged
Against the Highest, and fierce with graspéd arms
Clashed on their sounding shields the din of war,
Hurling defiance toward the vault of Heaven.

The exiled fiends now proceeded to build themselves a gorgeous palace-home, Pandemonium, and there they sat plotting—

A thousand demi-gods in golden seats.

They resolve that they will try to injure man, of whose creation in the Garden of Eden they have heard rumors.

Satan volunteers to go in search of the new world, and, aided by Sin and Death, comes at last through dreadful chaos to where it hangs suspended from heaven by a golden chain.

The poet now bursts into an invocation to Light as a prelude to a picture of heaven, and pitifully laments his own blindness.

With the year
Seasons return; but not to me returns
Day, or the sweet approach of even or morn,
Or sight of vernal bloom, or summer's rose,
Or flocks, or herds, or human face divine;

But cloud instead, and ever-during dark
Surrounds me, from the cheerful ways of men
Cut off.

In heaven God sees Satan approaching the world, and foretells to His only Son how man will be tempted and will fall, but the Son declares that He will become man and bring salvation to the race.



MR. OLIVER CROMWELL VISITS MR. JOHN MILTON

This fine picture, painted by Mr. David Neal, is printed by permission of the Berlin Photographic Company, New York.

Satan, now flying toward the earth, disguised as a stripling cherub, meets the Archangel Uriel, and, though Uriel is "the sharpest-sighted spirit of all in heaven," Satan deceives him into pointing out the way to Adam in Paradise, for angels are so pure that they cannot discern hypocrisy.

Lovely descriptions of Paradise follow. So sweet is the place, and so noble are Adam and Eve, "God-like erect, with native honor clad," as they pass hand in hand,

For contemplation he, and valour formed,
For softness she, and sweet attractive grace,

that Satan himself almost relents, and grieves over the evil work he has come to do. Meantime, Uriel, who suspected Satan of looks "alien from heaven" as he was flying towards the earth, descends and warns Gabriel, chief of the angelic guards of Paradise, to keep careful watch.

Now came still Evening on, and Twilight gray
Had in her sober livery all things clad;
Silence accompanied; for beast and bird,
They to their grassy couch, these to their nests

Were slunk, all but the wakeful nightingale.
She all night long her amorous descant sung.
Silence was pleased. Now glowed the firmament
With living sapphires; Hesperus, that led
The starry host, rode brightest, till the Moon,
Rising in clouded majesty, at length
Apparent queen, unveiled her peerless light,
And o'er the dark her silver mantle threw.

Adam and Eve retire to rest, and the angel-guards, Ithuriel and Zephon, searching the garden, find Satan squatting like a toad close to Eve's ear to taint her dreams.

Him thus intent Ithuriel with his spear
Touched lightly; for no falsehood can endure
Touch of celestial temper, but returns
Of force to its own likeness.

So Satan changes into his own form "of regal port, but faded splendor wan," and, after some altercation with his captors, flies away and hides himself for seven nights, circling round and round in the shadow of the earth.

In the morning Adam and Eve, lowly bowing and adoring, offer to their Maker their hymn of praise. The Almighty now sends to Eden the Archangel Raphael, who warns Adam of his danger, and tells him the story of Satan's disobedience and fall. He also tells how the earth began, and why—in order that another race, that of man, might take in heaven the places of the outcast angels, lest Satan should feel a pride in having "dispeopled heaven."

Satan now returns and takes the form of a serpent. Eve in the morning suggests to Adam that they shall work apart in the garden till noon; he doubts the wisdom of it, but after urging her to be watchful at last gives way.

Searching through the garden, Satan discovers her alone, and by flattery persuades her to disobey the command of God and eat of the forbidden Tree of Knowledge. Fearing the effect may be separation from Adam, she resolves that he, too, shall eat, that they may live or die together; and

He scrupled not to eat
Against his better knowledge, not deceived,
But fondly overcome by female charms.

The guilty pair soon become remorseful, unhappy, and quarrelsome. Satan, returning to Pandemonium, is received with loud applause by all his followers, which changes into a hiss as he and all his hosts are turned into crawling snakes.

After a time both Adam and Eve feel "sorrow unfeignéd and humiliation meek" for their fault, and the Archangel Michael is sent to tell them that their repentance will be accepted by God, and that at last the race will be redeemed; but meantime Paradise can no longer be their home. The angel having led them forth,

Some natural tears they dropped, but wiped them soon,
The world was all before them, where to choose
Their place of rest, and Providence their Guide.
They, hand in hand, with wandering steps and slow
Through Eden took their solitary way.

For this poem, which was published in 1667, the poet only received fifty dollars.

"Paradise Regained," written before "Paradise Lost" was published, was printed four years later—that is, in 1671. It tells of the temptation of Christ by Satan in the wilderness; but this later Satan is a much less powerful conception than the Satan of "Paradise Lost," and the poem, by comparison, is tame.

With "Paradise Regained" was included "Samson Agonistes," the last of Milton's writings, a drama modeled on the Greek style, which nobly tells a story of profoundest pathos. The picture of Samson, shorn, blind, in the midst of his enemies, with the religious hopes of his nation beclouded, is a picture of Milton himself in his latter days.

The story is nobly told, and when the heroic end comes we feel the appropriateness of the calm lament—

Nothing is here for tears, nothing to wail
Or knock the breast; no weakness, no contempt,
Dispraise or blame; nothing but well and fair
And what may quiet us in a death so noble.

Three years after the publication of "Samson" Milton died, not an old man as we count age now, not yet sixty-six, but his strenuous life passed, and his noble youthful ambitions fulfilled. He is buried in St. Giles's Church, Cripplegate, London, and no purer or more lofty spirit has ever joined that

Garden of death where the singers whose names are deathless
Singing together make music unheard of men.

CONTINUED ON PAGE 5785.



THE KING'S GUEST

CONTINUED FROM 5570

ONCE upon a time there was a rich man who was very cruel to the poor people living on his estates. They were very poor people indeed, and the rich man, who owned all the land and employed all the people, paid them very low wages, and oppressed them in every way. There came a famine in the land, and the poor people went to the rich man's castle and begged for bread, but the rich man refused them even a crust.

The king of the country heard all this and he sent for the rich man to come and dine with him. You may imagine how proud the rich man was when the king's invitation came. He got out his best horses and his best carriage, and dressed up his servants in wonderful garments, and drove to the king's palace.

The king led him into the dining-room, where the table was laid for two. It was laden with lovely flowers and fruits, and foods of every kind, and there were the king's servants to wait upon each of them.

They brought the soup to the king, and he drank it, and when he had nearly finished it they brought the rich man some soup. But just as he was about to taste it the king finished his soup, and the attendants took the plates away, so that the rich man had not even a spoonful. Then they brought the king another dish, which he enjoyed, and just as he was finishing it they brought the rich man's dish. But before he could touch his knife and fork, the king finished, and both plates were taken away.

And so they brought the king dish after dish, and the king said continually to his guest how good these things were and he hoped the rich man was enjoying them. Yet every time the rich man tried to taste his food, his plate was taken away. At last the dinner ended, and the rich man had not had a single bite of food. Not even a crust of bread could he get, for the servants forgot to bring him any; and when you are dining with a king you must not ask for anything. And, of course, the rich man was very hungry, for he had been so busy getting ready for this dinner with the king, that he had had nothing to eat all day, and the dinner had lasted a long time.

When the meal ended, the king led the rich man into the hall, and bade him good-night, and set him out on the long road to his castle. Not a word did he say about the strange dinner at which his guest had eaten nothing, but the rich man went home almost famished with hunger, and he never forgot the lesson which the king had silently taught him. He was very good to the poor after that, and became their true friend.

THE STORY OF MIDAS

THE KING WHO HAD THE GOLDEN TOUCH

ONCE there was a king in Thrace named Midas, the same Midas of whom they said he had the ears of an ass. Now Midas loved gold, not because of what it would buy, or the good he could do if he had it, but because he was a miser. Even when he worked among the rose-trees in his beautiful garden, he wished that he could turn all the roses into gold. There was just one thing in the world that he loved more than gold, and that was his only child, his little blue-eyed, golden-haired daughter.

There was in that country a powerful youth named Dionysius, whom some call Bacchus in their stories. He was the spirit of the springtime, and of all youth and gladness. Now Dionysius had an old companion named Silenus, who had brought him up. And one day Silenus strayed into Midas' rose-garden, and as he slept in the shade of a rose-bush, the gardeners found him and brought him to Midas to be punished as a trespasser. But Midas was pleased with him, and made a great feast for him and sent him home.

Then Dionysius, who dearly loved Silenus, went to Midas, and said:

"Ask me what you will, and if it lies within my power, I will give it to you."

And Midas said with eagerness: "Let me have the golden touch."

Dionysius, who had thought that Midas, as a good king ought, would have asked for some gift which would have made his people happy, looked at him with sadness, and slowly said, "The gift is yours," and then he went away.

When the god was gone, Midas sank into his chair, and as he touched the seat it turned to gleaming gold.

He looked at it enraptured. He touched it. He rubbed it with the sleeve of his mantle to make it shine more brightly. There was no doubt about it. It was gold, pure gold, and with growing excitement he walked about the hall, touching things here and there as he went, until the great room flashed as the morning sun shone in upon it through the open doors and windows. When the hall was finished to his liking, he went out, and down into his garden of roses, leaving golden footprints as he went. The garden was a lovely spot. There were roses on every side, from the blooms of snowy whiteness that his little daughter loved, and flowers of palest pink, to great crimson beauties, with golden hearts. Their refreshing fragrance spread around, and rose upward to the blue sky above them. It was still early in the day, and the air was full of the song of birds, and the busy hum of bees. But Midas cared for none of these things. He was still hungry for gold, and he quickly went from bush to bush, touching each one as he went. At last his work was done, and as he turned away, the golden tinkle of the leaves and flowers, as they waved stiffly in the breeze, seemed to him the sweetest music he had ever heard.

In his excitement over the promise of the god, he had forgotten to eat breakfast. Now it was past noon, and, as he felt both hungry and thirsty, he hastened back to his golden hall, and called to his slaves to bring him food. They did so, and he sat down with eager appetite to eat it. But as the morsels touched his lips, the food turned to gold, and the wine and water flowed tinkling back into the cups to settle in a solid mass of gold. He sat and looked aghast at his golden treasure, for of what use were golden cups and platters, if he must die of hunger? His gloomy thoughts were broken by the sound of bitter childish weeping, and as he raised his eyes, his little daughter came running into the hall, a spray of golden roses in her hand.

"Father, dear father," she cried, "some one has killed all our beautiful roses!"

"I turned them into gold, my child," said Midas gently; "they are far more beautiful so."

"Ah no," said the little one; "put them back, father, put them back!" and as she sobbed out the words, she flung herself into his arms. Lovingly, he put his hand on her head, and began, "My little daughter," when he felt her stiffen in his arms, and in a moment he held only a golden statue.

Horrified, he laid her down on a couch near by, and cried aloud for help,

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but all his servants had fled in terror of their lives, and he was left alone.

All day the mourning father sat in the silent house, beside the statue that had been his child, hoping only that death would come soon, and take him too. But as the sun set Dionysius once more appeared, seeming to bring renewed life and joy into the lonely dwelling. Still, his face was stern as he said to Midas, "Are you yet satisfied?"

And Midas answered humbly: "I was wrong. There are many gifts that are better far than gold. I had them, and I did not know it. Is it too late? Will you take back the fatal gift? For myself, I ask nothing, but bring my little child to life, and let me see her skip about once more, before I die."

Then Dionysius said: "If I do, you will lose not only the golden touch, but all the gold that you have won to-day will be lost."

Midas started eagerly to his feet. "You will do it!" he cried.

And as Dionysius pointed toward the couch, he turned and saw his little daughter sitting on its edge, ruefully looking at the broken spray of roses in her hand.

"Father," she said, "I had a horrid dream. I thought that some one had turned our lovely roses into hateful, ugly things of gold."

"Shall we go," said Midas, "and make sure that it is not true?"

With a grateful heart, he turned to thank the god; but Dionysius, happy in the happiness he had given, had gone away. Then hand in hand, Midas and his little daughter went out into the silver moonlight, across the dewy grass, and into the gardens where the roses bloomed against the background of green trees beyond them, and the nightingale sang to his mate, as she brooded over her sleeping nestlings.

"It was only an ugly dream," the little girl said merrily. And her father answered, "Yes, my daughter; it was all a hateful dream."

THE LONELY SHEPHERD BOY

SOME years ago a little French boy was following his flock over the pasture-lands of Gascony. It was a lonely life, for he seldom saw any one all day, and sometimes he was out half the night, too. Nor did little Denys Puech like being a shepherd. His heart was not in his work, and to be a farmer, when he grew up, was not at all what he wished.

Even as a little child Denys had wanted to draw and carve everything he saw; and now, while his sheep nibbled the herbage, the boy modeled little statues out of clay, and baked them in the sun, or carved figures out of chestnuts or bits of wood. His fingers were always busy. Sometimes, when he could get paper, he would try to write verses.

At home no one wanted to read his poems or cared about his figures, and often Denys was restless and unhappy. A year passed, and one day his master told him to take a number of sheep to the fair at Estaing. Off he set with his charges, and when he came to the town he was filled with pleasure and surprise.

Presently Denys and his flock arrived at the bridge over the River Lot, and there, while the sheep went on, their young guardian stood still. For there, on the bridge, stood a statue of the Bishop of Rodez. It was the first statue the boy had seen, and he stood as if turned to stone himself, gazing up at it with eyes filled with wonder and admiration.

Then a thought flashed into his mind. Gathering together a little heap of mud from the roadside, he began to make a figure like the bishop. The passers-by looked curiously at him as he worked on, forgetful of his sheep. Patiently he modeled the figure, carefully copying the very lace on the bishop's robes.

The little statue was nearly finished when a heavy hand fell on the boy's shoulder and a harsh voice began to load him with reproaches. It was his master; and one cannot wonder that he was angry, for his sheep were wandering all over the town, while the young shepherd stood there as if he had nothing to do but amuse himself.

"The lad is not fit for a shepherd!" cried his master.

"He will never do for a farmer!" sighed his parents.

So when Denys was sixteen, they gave way, and let him go to a studio and learn to be a sculptor.

The little herd-boy is now a famous man, and his beautiful statues are known to the whole of France, and far beyond it.

THE HUNDRED THOUSAND MONKEYS

THIS is a story that begins on the banks of the River Ganges, in India.

There are villages on the banks of the Ganges, and in one of them a little boy called Singh lived in a hut with his father and mother. It was his business to make curry for his father and mother while they were busy out of doors.

But one day Singh found it hot and also dull in the hut where he was busy with the curry. The sun was hotter still outside, but when he went to the door and looked out, Singh saw cool shadows under the tree, cooler than the dark of the hut, because of the breeze that was lifting the big leaves and letting them flap softly back again. So Singh went and lay in the shadow of the tree.

Presently his father and mother came back hungry for their curry, and when they found that Singh had forgotten all about it, they beat him till he was very sore, and then made curry for themselves.

Singh ran away into the forest.

There were parrots in the forest, green and red and yellow, and they shrieked loudly as they flew from the palm to the banyan tree, and from the acacia to the feathery bamboo. There were snakes, spotted and shiny ones, brown and yellow ones, and black ones, and pale bright green ones, and they hissed and slid away into the long grass. There were bigger things, too.

Singh heard the bamboos crack and the branches break, and saw the long grass wave where the big beasts were stepping. He also heard them roar. He thought they would probably eat him, but he did not mind, because his body was sore. And then a monkey dropped to the ground in front of him. The monkey had been hanging by one hand from the bough of a tree watching Singh for some time.



"AAH!" SAID A HUNDRED THOUSAND SERIOUS-FACED APES

This picture is from the painting by J. C. Dollman, A.R.W.S., by permission of Sir Alfred Hickman, Bart.

"What is the matter with you?" asked the monkey.

"I have been beaten," said Singh.

"No, no, that is not what is the matter with you," said the monkey.

"What is it, then?" said Singh.

"Why, yes. Your beating is over, and your skin is already not so sore as it was. The matter with you is that you want to tell a hundred thousand people about it, and there's no one to listen to you."

"Yes," sobbed Singh, "that is quite true. They are eating curry in the

village, and if I try to tell them about it they will only beat me again, and make me more sore."

"Come with me," said the monkey, "and you shall tell a hundred thousand people, and they shall weep for your sore body, and you will feel better."

He caught Singh with his skinny hand, and ran through the undergrowth of the forest. Singh ran with him for a long time. He was too busy dodging branches, and jumping over fallen logs or puddles of mud, to notice how they went; so that he was not very surprised when the trees came to an end, and the forest opened into a white old city lying in marble ruins. There were fallen temples and wonderful broken pavements, and everything shone dead white in the hot, glaring Indian sunshine.

There were no people in the city, but as for monkeys—there seemed to be more than Singh believed there were in all the forests of the world.

"Tell these people," said the monkey who had brought him. And when the other monkeys crowded up, this monkey looked laughingly at Singh, and went away, and sat alone on the marble steps of what had long ago been a temple.

"I have been beaten and my back is sore," began Singh.

"Aah!" said a hundred thousand serious-faced apes, their eyes fixed steadily on his face.

"Because I lay in the sun and neglected the curry while they were working."

"Aah!" said the hundred thousand apes, all looking very much interested.

"My name is Singh, and I am very miserable."

"Aah!" said the apes.

"The people of the village have cast me out with a sore skin and no curry."

"Aah!" said the apes.

"A sore skin and no curry," said Singh again, for he could not think of anything else to say.

"Aah!" said the apes, as if these were only the beginnings of his troubles.

Singh could not think of anything else, and he was very unhappy, because he wanted to complain.

"Aah!" said the apes.

"A sore skin," said Singh miserably.

"Aah!" answered the apes impatiently. He heard some of them say, "Is that all?"

"No curry," he said once more; and then getting up quickly, he looked for the monkey who had brought him, and saw him sitting on the temple steps.

"Please take me back," he said. "I am not miserable enough for these people."

And the monkey said, "I thought so," and laughed, and took him back. But he was not beaten again. His mother was glad to see him, and gave him hot curry and put him to bed.

Now, that is the best of all ways to be comforted. If ever you feel miserable, go and tell it to a hundred thousand serious-faced monkeys, and you will find that you are not miserable enough.

THE KAFIR AND THE LION

AN old Kafir was trudging slowly back to his master's farm in Northern Rhodesia when he heard a sound in the bush that made his blood run cold. A white stranger would not have known what the slight but continual crackling in the brushwood meant, but the native knew, and trembled.

A lion was following him, and watching him as a cat watches a mouse. But, not being emboldened by hunger, it was waiting till nightfall to make its spring. Unhappily, it was already growing dusk, and the farm was still far off, and the old man had no other weapon than the stick that he was tottering along with.

How could he escape? There was no bush high enough to protect him from the lion. But as he went along the old negro worked out a plan, a simple but very daring plan, which no white man would have thought of.

On coming to a low hill that sloped gently up on one side, and then ended in a sudden precipice, the native slowly walked up it, and sat on the edge of the rock. Half turning his head, he saw the lion watching him.

As soon as it grew dark, the old man climbed down to a footing underneath the precipice, and, putting his hat and coat on his stick, he lifted it above the rock. In the meantime the lion had been creeping up. When within striking distance, he made a sudden leap at the hat and coat and stick, and over the precipice he went, and landed on the plain with a broken neck. The next morning the wise old Kafir had the pleasure of skinning his dreaded enemy.

PROVERB STORIES

Every nation has its proverbs—short, pithy sayings containing much wisdom. The stories on this page illustrate some of these proverbs.

THE FARMER AND HIS SACKS

Repay Kindness with Kindness

A FARMER was taking his grist to the mill in sacks thrown across the back of his horse. On the way, the horse stumbled, and one of the sacks fell to the ground. It was too heavy for him to lift, and he was at a loss to know what to do. As he stood wondering, he saw a horseman coming towards him.

When the rider came nearer the farmer saw that he was none other than the nobleman who lived in the great house at the top of the hill. It was impossible to ask help from one of his rank.

The nobleman, however, was something more than a man with a title—he was a gentleman, and he dismounted.

"I see you have had something of a mishap, friend," he said. "It is fortunate I came along just now, for help is not always handy on these roads."

So saying, he took one end of the sack, the farmer took the other, and the load was once more placed on the horse's back.

"My lord," said the farmer, lifting his cap, "how can I thank you?"

"Easily enough, my good fellow," said the nobleman. "Whenever you see anyone in a difficulty, help him all you can, and that will be thanking me."

THE BAG OF PEAS

There's no Luck in Laziness

"DO you believe in luck?" said a king to one of his officers.

"Yes," answered the officer, "I do."

"Ah!" laughed the king. "I am afraid you could not prove to me that there is any such thing in the world."

"That may be, your Majesty," answered the officer; "but if it please you, we might try to find out. I have thought even now of a plan."

He whispered in the king's ear, and his Majesty replied:

"Very good, very good indeed; let us try it without loss of time."

So that night the officer hung a bag from the ceiling of one of the rooms in the palace. What it contained none but the king and the officer knew. Then two men were put into the room. When the door was shut, one of the men, who believed in luck, laid himself in a corner and prepared for sleep; the other looked about him, and at once saw the bag hanging from the ceiling.

He reached up and put in his hand, and found some peas. "One might have a worse supper," he thought, as he took out a handful and ate them.

Presently he came on some diamonds, but, in the dark, he thought they were mere stones, and of no value. So he threw them towards his companion, saying:

"Take the stones for your idleness."

In the morning the king and his officer came to the room, and told each man he might keep what he had found. The one man got the peas which he had eaten; the other got the diamonds.

"Now your Majesty," said the officer, "what do you say?"

"Truly," answered the king, "you seem to have the best of the argument. There may be such a thing as luck; but it is as rare as peas mixed with diamonds, and so let none hope to live by luck."

THE TWO KINGS

The Second Word Makes the Quarrel

THERE was once a king who sent a message to the king of a neighboring country, saying:

"Send me a blue pig with a black tail, or else——"

To this the other king replied:

"I have not got one; and if I had——"

When the first king received this answer he flew into a great rage, and declared war against the other. For many weary months fighting went on, but at last the two kings arranged a meeting.

"What did you mean," said the first, "by saying, 'Send me a blue pig with a black tail, or else——'?"

"Why," he answered, "I meant a blue pig with a black tail, or else some other color. And now let me ask you what you meant by your message, 'I have not got one, and if I had——'?"

"My meaning was simple enough; for, of course, if I had had such a pig I should have sent it."

"Dear me, how foolish we have been! Let us make peace and be friends."

So peace was made, and the story was written in the annals of both countries to serve as a warning to those that should come after to be slow to take offence.

THE NEXT STORIES ARE ON PAGE 5771.



A great modern ironworks, showing the furnaces and the wharf at which the iron ore is landed.

MAKING IRON AND STEEL

THE WONDERFUL SIGHT IN THE GREAT FURNACES

CONTINUED FROM 5606

PERHAPS the boys and girls of to-day do not realize that people did not always have high buildings like those we see around us everywhere, nor such great iron bridges as now span our rivers. War ships and guns such as we now have were never thought of a few years ago, and our ocean steamships are gigantic affairs compared to those of former times. So, too, our powerful machinery, steel rails, and cars, and many other things made of iron and steel, are all bigger and better than those people used not so long ago. This all comes about because of the improvements in the making of iron and steel.

Iron and steel are now the commonest and cheapest of all the metals. This was not always so. The metals, gold, silver, and copper, were used by the ancients long before anything was known of iron. I think you will easily see why this was so when I tell you that iron is almost never found in a native state as we find gold, silver, and copper. Very rarely, almost pure iron is found in rocks which show evidences of great heat, and some meteorites which drop from the skies have iron in them. A man might dig for a lifetime deep down into the earth and never come across any iron. This is because it is almost always found in combination with some other element and must be reduced, in order to be of any use to us. Now the Greeks had discovered how to reduce the ore to make iron and no doubt the Romans learned of them. The people of Great Britain, too, had found a way to produce iron, for when the Romans came to England they found iron works in the Forest of Dean.

Of course the methods of all these people were crude and primitive when compared with our way of doing it to-day. You know in order to reduce the ore to iron it must be placed in a furnace with fuel and a blast of air strong enough to increase the heat until the ore melts. The Greek and the Roman way was to heat the ore to a melting point in a furnace which was nothing more than a pit surrounded by walls of clay about a foot high. The fuel for this crude furnace was charcoal. Layers of broken iron ore and charcoal were placed alternately in the furnace until the hole

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was filled, when a layer of charcoal was heaped over all. A rude form of bellows made from skins furnished the blast. After some hours of firing, the melted ore and cinders were found in a lump at the bottom of the furnace. As the cinders were lighter than the ore they settled on top of the mass. The iron worker broke off this cinder lump and what remained was iron. The iron made in this way was very good indeed, but the great cinder heaps left in Yorkshire by the Romans show us that much good material was wasted. In fact, the cinder heaps contained so much iron that they served as ore for twenty furnaces working constantly for about three centuries.

THE FIRST IRON MADE IN AMERICA AT JAMESTOWN

In the year 1624 a little colony of Englishmen living at Jamestown built furnaces there on the banks of Falling Creek, and produced the first iron made on this continent. This started the iron production in America, and later it was taken up by the people of Massachusetts, Connecticut, and Rhode Island, for much "bog" and "pond" ore was found in these eastern states. Furnaces were built at that time close to the source of the iron ore and the forests which served or furnished the fuel. Iron ore was found in several other colonies, and iron was soon common in the New World.

As I have told you, charcoal or burnt wood was the only fuel used at that time. The English were alarmed at the rapid destruction of their forests, and asked what they would do for fuel for their furnaces when the timber was all used up, in much the same way as we are asking to-day what we shall do for fuel when our coal fields give out. They were forced to look for something to take the place of charcoal. Coal was suggested as a substitute, but people laughed at the idea that coal could do the work of heating the furnace as well as what they had been using.

WHY COAL DID NOT MAKE GOOD IRON

Coal had already been tried for the smelting of iron but the plan was not understood. We know now that it failed because coal was too soft to stand the weight of the iron ore when placed upon it. The weight packed the coal so tight that the air could not find its way through the mass. The coal could not burn fast enough to produce a high temperature during the smelting process. However, during the process it was observed that much of the coal that was heated burned into coke. This coke showed the power to hold up the ore without being crushed, just what coal was unable to do. From that time coke was the fuel and remains the fuel to-day for smelting ores.

In the United States, however, the conditions were different. The forests were large and afforded plenty of wood for making charcoal. In fact, it was so plentiful that charcoal was used here for fifty years after the English had begun to use coal, and the product from such furnaces was so much better than that of the coal furnaces that the Americans were encouraged to ship their charcoal iron-metal to England. In time, though, the Americans were forced to face the same problem about their wood as the English had met. Fortunately, at about this time coal came into common use in the new country, and soon attention was turned to its manufacture into coke, for its use in the growing iron industry.

In 1819 and again in 1841 the attempt had been made but did not meet with success. To encourage experimenting, in 1835, the Franklin Institute of Pennsylvania offered a premium of a gold medal to the person who should manufacture in the United States the greatest quantity of iron from ore during the year, using no other fuel than bituminous coal.

THE COAL AND IRON BELT, OR WHERE THE COAL AND IRON ARE FOUND

The greatest iron ore region in this continent lies near the shores of Lake Superior. The picture here shows an open pit iron mine of the famous Mesaba Range near Lake Superior in Minnesota. One can see how readily the ore can be taken from the open pit by steam shovels and deposited at once in the cars. These deposits are 300 feet deep in some places. A single mine in Minnesota is said to have produced 1,681,000 long tons in one year, more than was produced in all America before 1854. One would naturally expect the iron industry to be placed near these pits, but this is not the case. The great iron manufacturing centres are Pennsylvania, Ohio, Illinois, New York, the Virginias and Nova Scotia, where less iron is found, and much iron ore must be shipped from ports on the

shores of Lake Superior or Newfoundland. Alabama is an exception, for there both coal and iron are found close together.

If you follow the line of the bituminous coal belt, from which coke is made, you will see that it runs through the region I have just mentioned. This is called the Appalachian coal belt and is about 800 miles long and about 150 miles wide and contains within its borders the great centres of the iron and steel industries. In fact these industries will be found to lie close to the source of the fuel rather than the source of the ore.

How the fuel is made that supplies the great iron furnaces

Success in the iron and steel industries is due to the making of coke out of coal, but not until the year 1880 did the manufacture of coke mean much to the iron industry. Before that time very little coke was made in North America. About that time, making coke out of soft coal in what is called a beehive coking oven attained a position of importance. The name of the oven was no doubt suggested from its resemblance to the ancient dome-shaped beehive.

These ovens have an opening at the top through which five tons or more of coal is dumped. This charge of coal falls on the bottom of the oven, and is then lighted by placing shavings of wood on the top of the heap. The process of fusing and coking now begins on the top surface of the charge of coal and goes down through the mass. It takes about forty-eight hours to burn this five tons of coal into coke.

This method is yet most used in the United States, but wastes some of the most valuable parts of coal. These are driven off in the gases and lost. Ammonia, which is very valuable, is one of them, and the tar from which medicines and colors, as well as many other things are made, is also lost. Sometimes these gases are conducted through a pipe and burned. The latest ovens cook the coal in closed ovens called retorts, and all the valuable gases are saved. There are several kinds of retort ovens in use in the United States and Canada.

The blast furnace where the ore is melted

This furnace is the first step in the making of iron and steel, and we shall now tell you something about it. It is a tall cylindrical iron or steel shell, seventy-five and sometimes one hundred feet tall, lined with fire brick on the inside. The fuel for this furnace is coke, which is the blast furnace fuel everywhere. Nearly all the coke manufactured to-day is burned up to make heat for melting the ore into pig iron.

The description of the blast furnace given under the picture, and the diagram, will tell you how it is made and will show you how it works. You will learn, too, that the product of this furnace is pig iron. This is the raw material for the puddling furnace, which produces wrought iron, and for the cupola furnace, which produces cast iron, the Bessemer Converter for the making of soft steels, and the open hearth furnaces for carbon steels and the crucible furnace for high carbon or tool steels.

The puddling furnace which makes one kind of iron

In 1784, Henry Cort invented the puddling furnace for the reducing of pig iron by a coal-heated process. Wrought iron, the product of this furnace, is very tough metal and will stand shocks but is easily welded. Pig iron as it comes from the blast furnace is put on the platform, or hearth, of the furnace. The fire-box lies in the end of the furnace, instead of underneath, and as the fire increases in temperature, the burning gases from the coal pass over the iron.

This heats the mass of pig lying upon the hearth. In a little while the iron begins to melt and the slag forms little pools on the bottom of the furnace. In about an hour the puddler stirs the whole mass with a long bar of iron called a rabbling bar. He keeps the temperature of the metal just below the melting point. At this temperature iron is in a pasty condition. By rolling it around he forms a ball weighing from 150 to 200 pounds. He is careful to see that the metal does not get too hot, for if it should, it could not be gathered into a ball. So the heat is regulated by opening and closing the damper on top of the chimney. When the ball is made it is taken out of the furnace by the aid of a pair of tongs and placed on wheels, and rushed off to the squeezer, where all the slag or impurities are squeezed out of it. Then it is put between the rollers and reduced to the proper size. This is called wrought iron and is placed on the markets of the world to be sold for making chains, grills, horse-

shoes, bolts, nuts, car handles, steps, and the like. It is tough and not brittle like cast iron.

THE FURNACES THAT MAKE STEEL FOR GUNS AND ARMOR PLATE

The product of the open hearth furnace is a very fine steel, out of which is made armor plate used on war vessels. Large guns are made from this steel, steel casings, large propeller shafts for vessels, crank shafts, and also most of the steel used on automobile forgings are made from this product. When you visit a steel mill where these furnaces are in operation you will see that the charging door is about fifteen or twenty feet above the floor level. The brick work below the furnace hearth is built up in a checker system, through which the gases rise, and are heated before reaching the melting zone.

The fuel used for the open hearth furnace is coal gas. It is the gas that is heated to a white heat on its way to the melting zone. This, you see, keeps the furnace in a very high temperature all the time, for there is no cold air of any kind entering the furnace while the furnace is in operation. In many ways this furnace is the most satisfactory of any mentioned for producing large quantities of steel. The molten metal can be held in this furnace any number of hours, during which time tests can be made until the required carbon point is determined. This assures a constant quality of steel. Sometimes small amounts of other metals are introduced into the steel for special purposes. For example, a very small amount of nickel increases the strength of the steel very much. Several other metals, such as chromium, and vanadium, are also used to make steel used in motor cars or in machinery where both strength and lightness are necessary .

THE CONVERTER THAT CHANGED THE WHOLE HISTORY OF STEEL-MAKING

The pictures and the description tell the story of Sir Henry Bessemer's great invention for changing pig iron into steel without the use of fuel. Molten cast iron is put into the converter. The blast added to the heat already in the cast iron, increases the heat enough to burn all the impurities out of the molten mass, and most of the carbon as well. Since good steel must have some carbon, the right proportion is put back into the molten steel. This makes a steel that is used for building material, bridges, steel cars, vehicles, railroad rails, fire escapes, grills, and is now replacing wrought iron for many things. It has no fibre like that of wrought iron, but can be twisted, bent, drawn out and shaped to any desired form without danger of breaking. Many blacksmiths prefer this steel to wrought iron for their work. This was the first cheap steel manufactured, and the result of the discovery, or invention, has been to increase the use of the metal.

THE STEEL THAT IS USED FOR THE CUTTING TOOLS OF THE WORLD

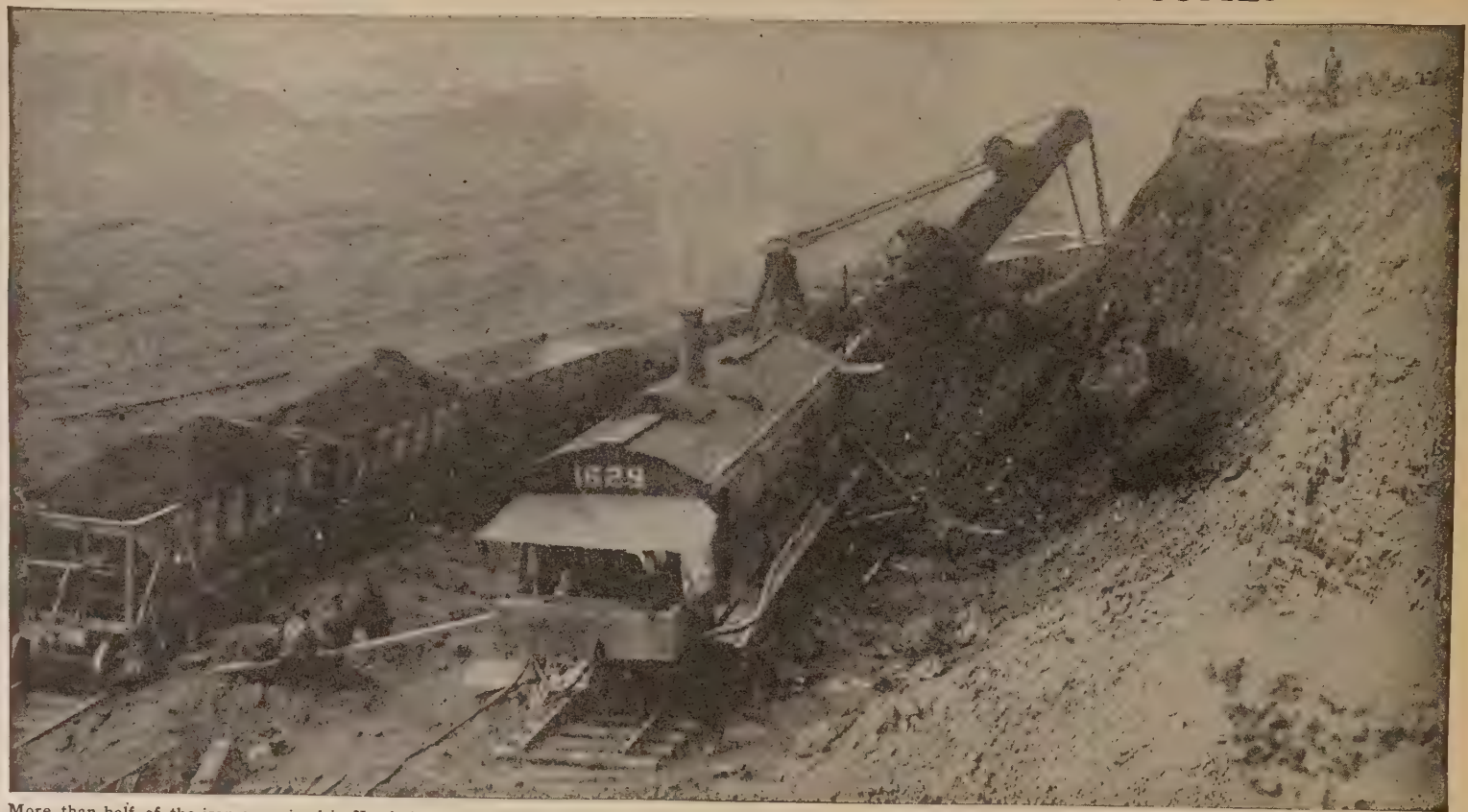
Crucible steel is found in the market under four different names. It is sometimes called (1) crucible steel, because it is melted in a graphite pot or crucible; (2) high carbon steel because it contains more carbon than any of the steels; (3) cast steel because it is cast into ingots and hammered into shapes for the market; (4) tool steel because all cutting tools are made from it, including our table cutlery, butcher knife blades, pocket knife blades, files, surgical instruments, and the like.

The method of manufacturing this steel is one of the simplest, yet great care must be exercised during the melting process. Refined iron is placed in a graphite pot or crucible with a certain amount of carbon. The crucible is then placed in the melting pit, which is a hole made in the ground, about four feet deep, lined with fire brick. The fuel for melting the metal in these pots is gas, preheated in the same way as was that of the open hearth furnace. It takes about three hours for the metal to melt and during that time the temperature of the furnace reaches 3000° F.

You can see that men who have this kind of work to do must be trained especially for the purpose. Their work days are only four to five hours long, and during that time they are dressed either in asbestos clothing or in overalls saturated with water. This is done to keep the heat away from their bodies while lifting the pots up from the pits. If they were not strong they could not stand the intense heat. It is the skill required in handling the hot metal just at the right time and the difficulty in making men fit to do this work that keeps tool steel at the high price asked.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5755

THE OPEN PIT MINE FROM WHICH THE ORE COMES



More than half of the iron ore mined in North America comes from the open pit mines of the Lake Superior region. The deposits are sometimes three hundred feet deep and seem almost inexhaustible. Here you see a steam shovel digging into a bank of ore in Minnesota, and loading the cars. The ore is not hard but is like a rotten stone you sometimes see. In another place we show how the steam shovel is at work digging the Panama Canal. One of these machines does more work than a thousand men could do with picks and shovels. In the next picture we shall follow the ore to the furnace, and see what happens.
Picture by courtesy of the Illinois Steel Co.

1695

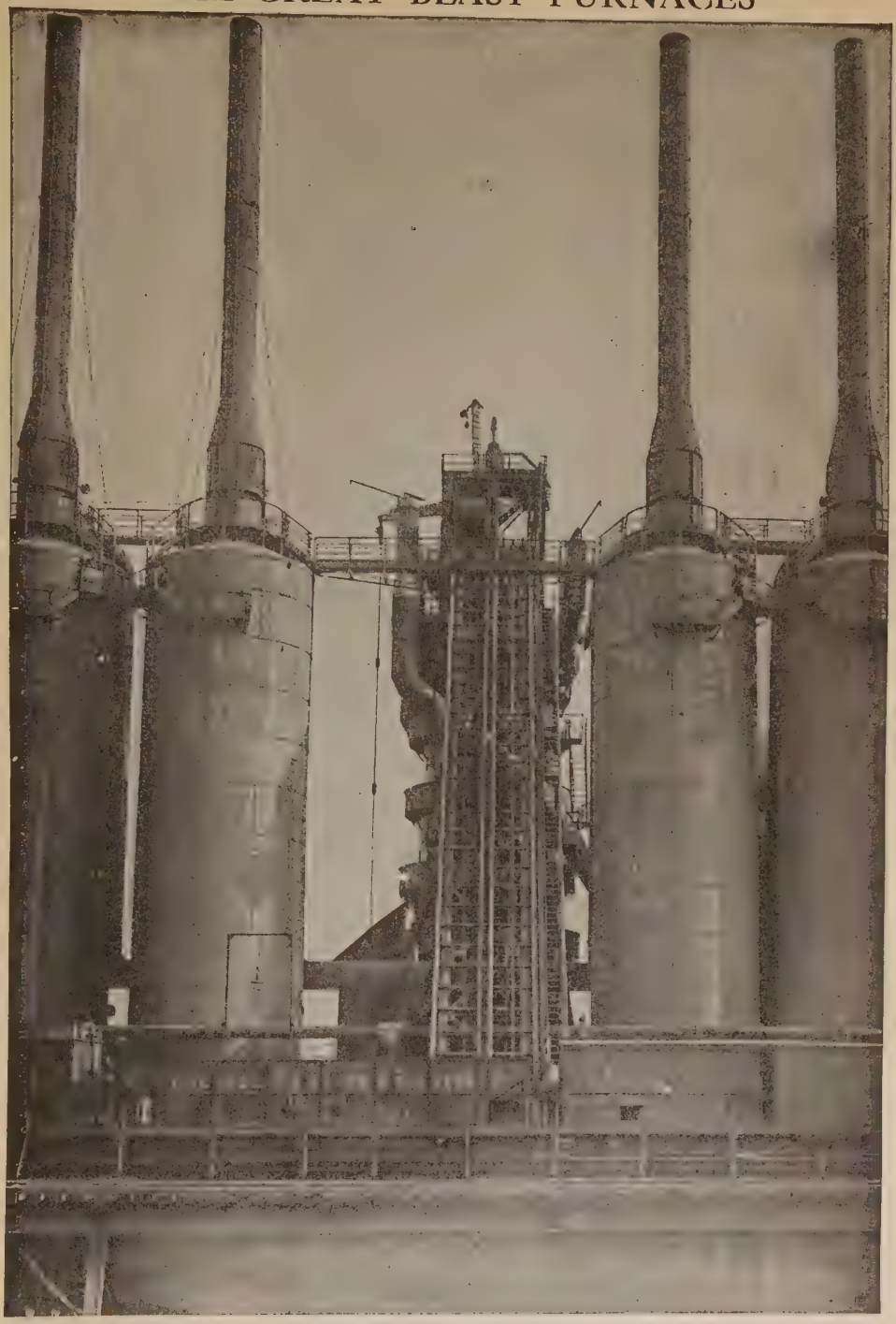


The iron ore which we saw the steam shovel loading into the cars is often transferred to great ore ships which carry it across the lake, either to the furnace or to another transfer point. Here we see one of the great ore ships, which is being unloaded. Some large and strong steamers are engaged in carrying ore which is finally to reach the great furnaces in the Middle West, or the East.



Think how long it would take to unload one of these ships by means of shovels. This is a close view of the scoops you can see above. When let down into the ship they gather up hundreds of pounds of ore and quickly run along the framework to the place where they dump the load and return for more.

THE GREAT BLAST FURNACES



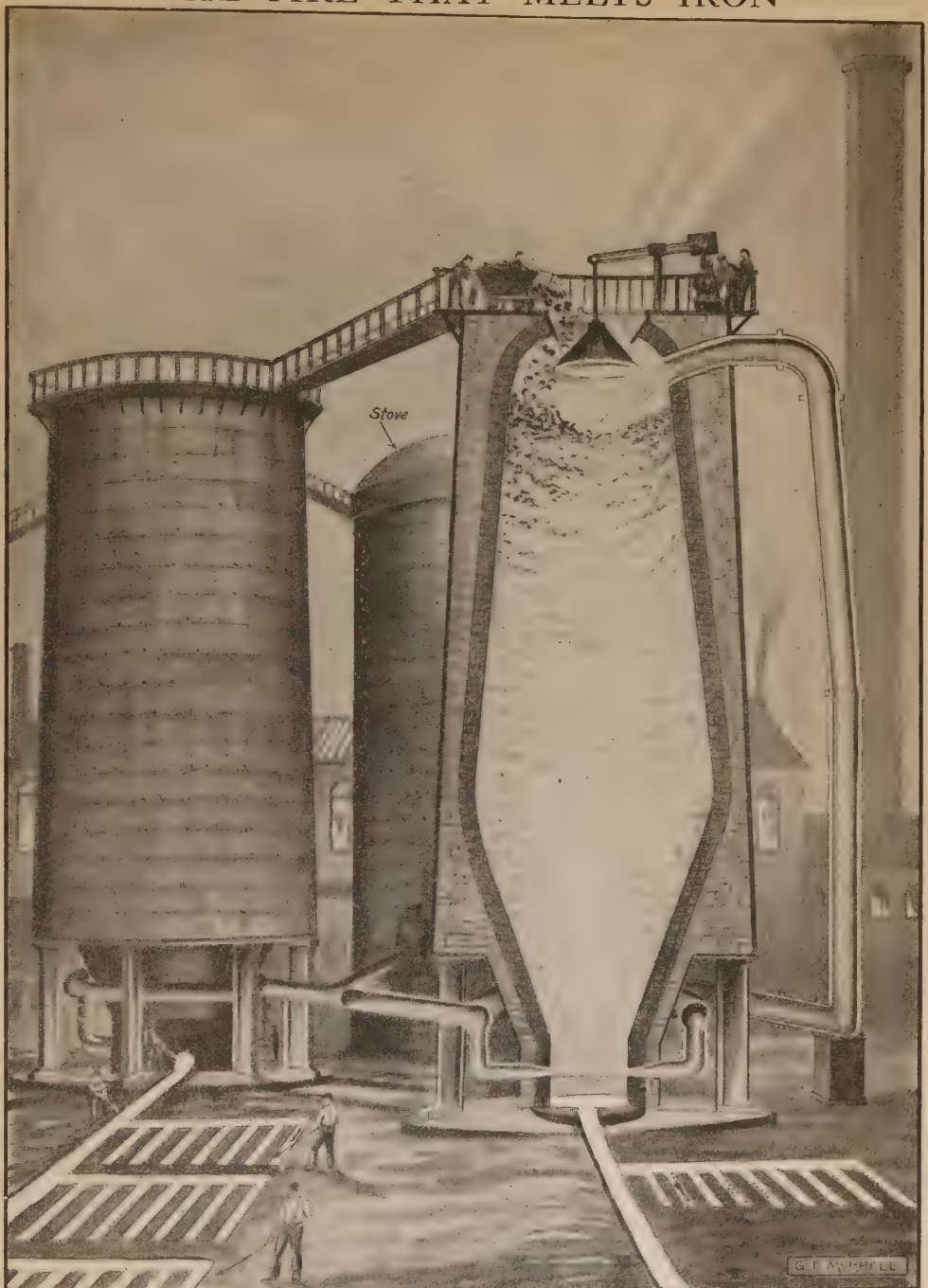
Now we come to the great steel works, the name of which you would recognize if we were to tell you. Here is a row of the blast furnaces, which are fully described on other pages, where we show you the top of one and a diagram of the interior of another. In the centre is the hoist which raises the ore, the coke and the limestone from the railway cars at the bottom to the top, where they are fed into the great monsters. Sometimes a great establishment has dozens of these furnaces.
Picture by courtesy of the Illinois Steel Co.

THE TOP OF A MIGHTY BLAST FURNACE



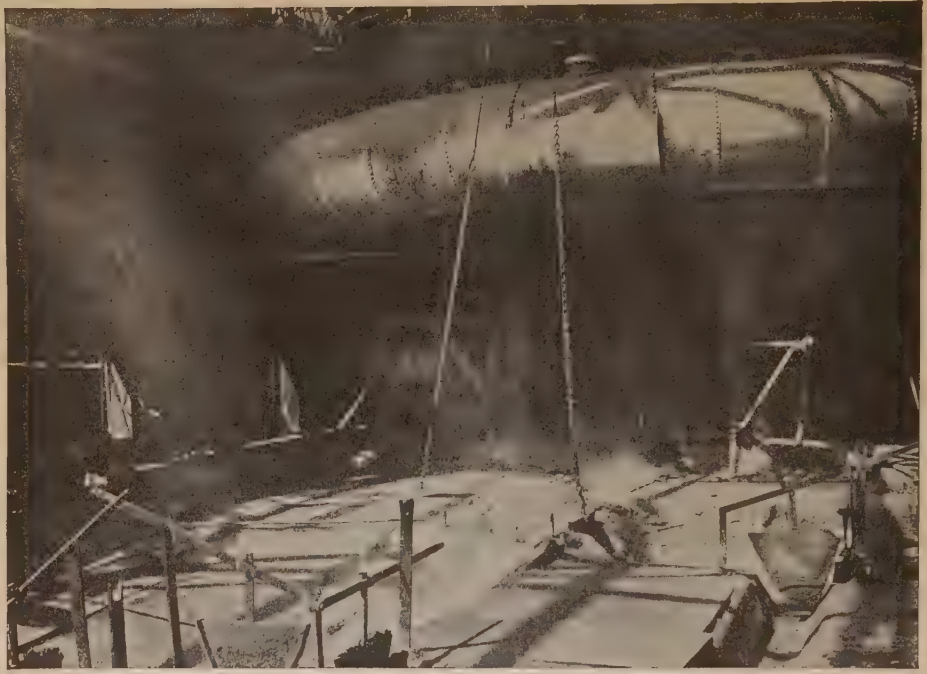
Here we see the top of one of the huge blast furnaces in which ore is melted and pig-iron produced. Pig-iron is really cast iron, and it received its name because, when it was run into trenches lying side by side, it was jokingly said to resemble a number of little pigs. The iron ore is pulled to the top of the furnace in great buckets, as shown in the picture. The blast furnaces are often 100 feet high and 120 feet round inside, and each one can produce 700 tons of pig-iron in a day. When the fire is started it is kept going for years, and if by accident it goes out and the molten iron inside becomes solid, the whole furnace has to be pulled down and rebuilt, at a great cost. Over 60,000,000 tons of pig-iron are produced in the world in a single year.

THE FIRE THAT MELTS IRON



This diagram shows the beginning of iron and steel. The ore dug out of the earth is carried to the top of the great shaft, in which a huge fire is burning. The lid of the furnace is lowered, and the ore falls into the furnace. There it lies, in the greatest heat that men can produce by fire. The lid closes, and the gases rush into the pipe on the right and into the stove, where they help to drive machinery. This machinery, in turn, forces hot air into the bottom of the furnace through the little entrance that we see. This hot air rises through the heart of the fiery furnace, and the heat melts the iron out of the ore until it trickles like water. At the bottom of the furnace the melted iron collects, and every few hours the "tap hole" is opened and the white-hot iron runs into the groove along the ground, and from this into other grooves called "sand molds," because they are cut out in sand. Here these streams of iron lie still until they set hard and can be taken out as solid bars.

TWO INTERESTING PROCESSES



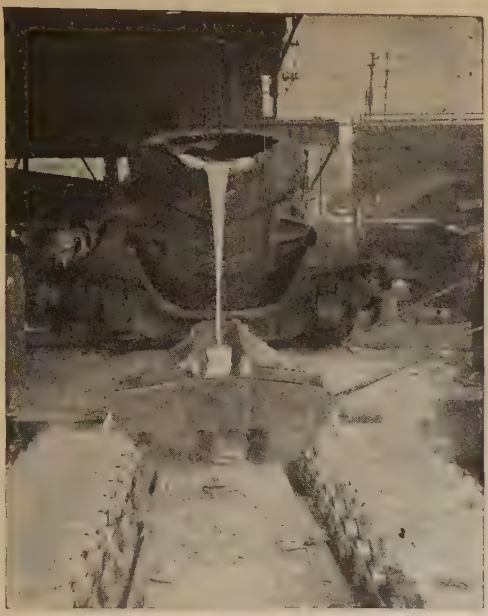
This picture shows the bottom of a blast furnace. The stream of iron is coming out of the bottom. The slag or impurities are on the top and are guided in one direction while the metal goes in the other. The melted iron goes to the endless-chain casting pig machine. When all the melted iron is tapped the hole at the bottom is plugged up with fire clay until enough is again melted down.



This picture is a little out of its order. It shows an open hearth furnace, which is described in the text and another picture of which is shown on page 5699. It is hard to understand how this furnace works unless one sees it in action. Steel made by this process is used for many different things.

Pictures by courtesy of the Illinois Steel Co.

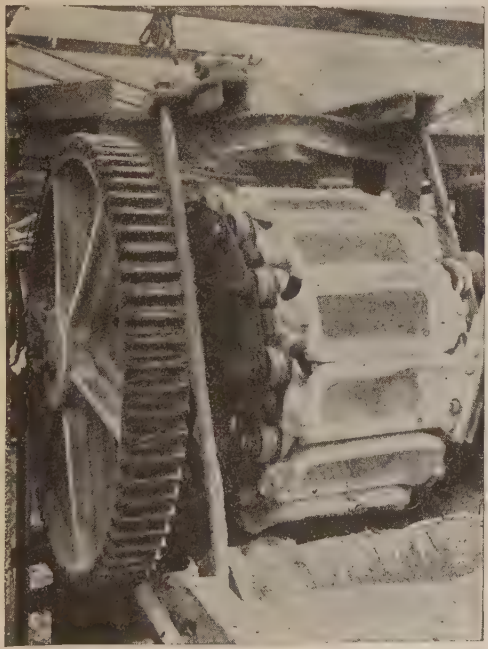
AN ENDLESS CHAIN OF WHITE-HOT IRON



Improvements in the manufacture of iron have been marvelous, and three blast furnaces at a single foundry now produce in one year as much pig iron as was made by the world a century ago. In this picture molten pig-iron is being poured into molds from a ladle which received its fiery load direct from the furnace.



The most advanced ironworks make pig-iron in ingots, as shown in these pictures. Instead of being run into trenches, the molten metal is tapped into a great vessel called a ladle, as seen in the first picture, and from this it is poured into a series of molds in a double line. Sometimes the line of molds makes a circle.



The molds run upon endless chains, and as succeeding molds are filled the chain moves on. When the metal has cooled sufficiently, the chain of molds turns round a wheel, as shown in this picture, and the ingots fall into cars waiting to receive them. Although solid, they are still at a very high temperature.

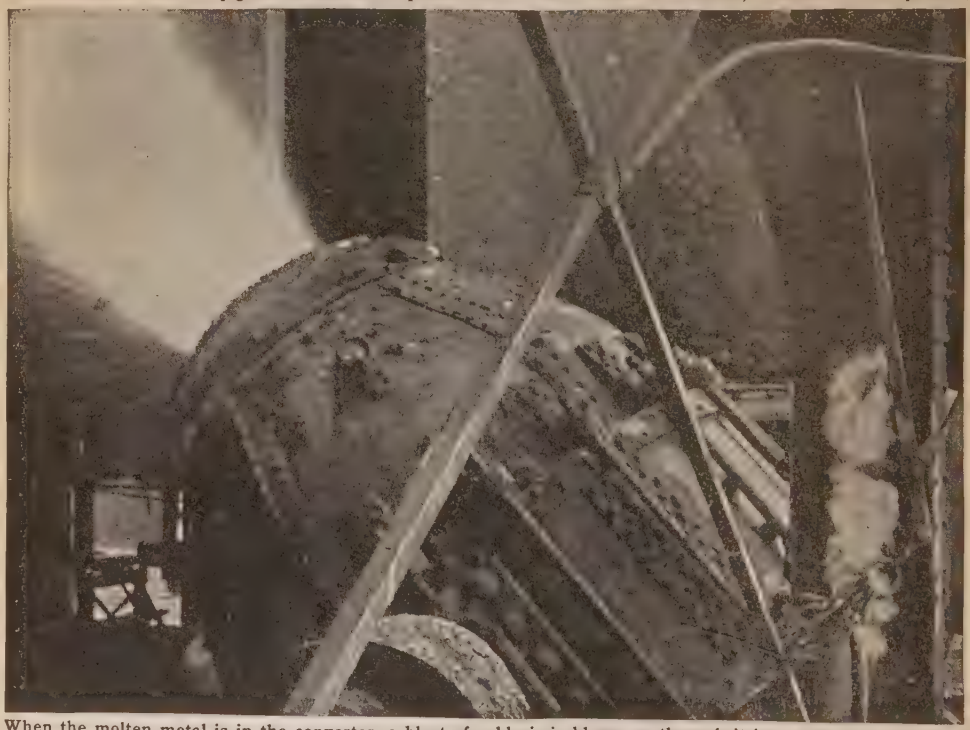


As the hot ingots are loaded into the cars, cold water is sprayed upon them. In pig, or cast, iron about three parts of every hundred are carbon. Wrought iron has little carbon, and steel is between the two, having usually about one part of carbon in every hundred parts, although the different kinds vary.

20 TONS OF STEEL MADE IN 20 MINUTES



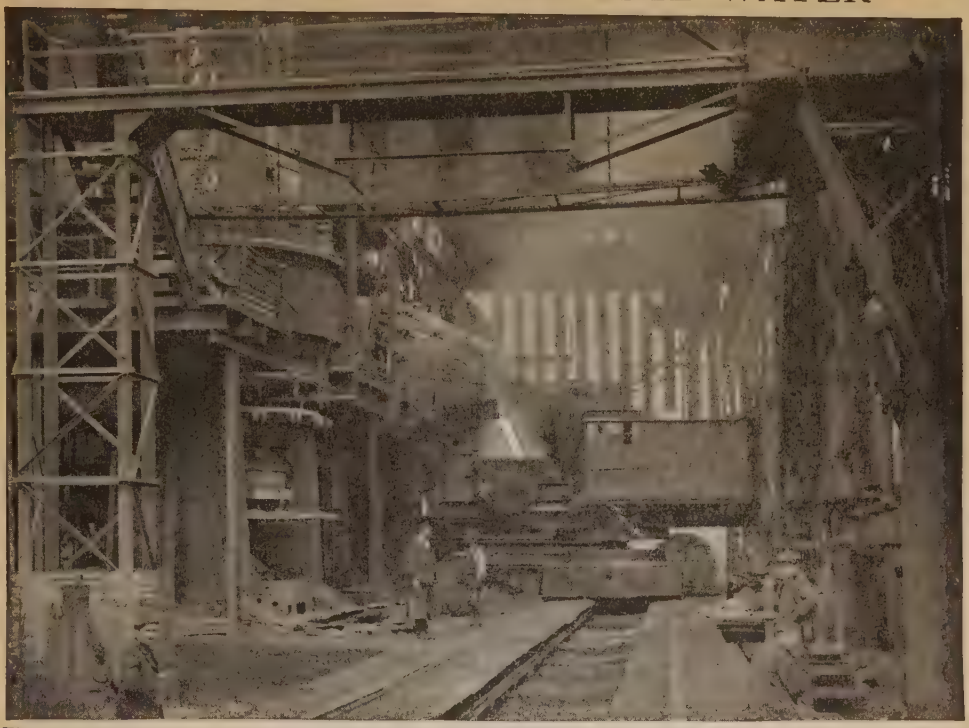
The first cheap and rapid process for making steel, a process by which much of the world's steel is still made, is known as the Bessemer process. It was invented by Sir Henry Bessemer, and greatly improved by David Mushet. Molten pig-iron is first of all poured into a vessel called a converter, as shown in this picture.



When the molten metal is in the converter, a blast of cold air is blown up through it in small jets. A roaring flame rushes from the mouth of the vessel, and is first of all violet, then orange, and then a dazzling white. Later, when the color becomes a faint blue, all the carbon has been burned up. Molten metal, containing the right proportion of carbon, is added, and the white-hot mass is at once converted into steel. The process takes less than twenty minutes, and a large Bessemer converter at a modern steel-works holds twenty tons.

Photographs copyright by H. C. White Co.

POURING OUT STEEL LIKE WATER



The converter works on trunnions, or pivots, and when the steel is ready, the converter is turned and the liquid metal is poured into a great ladle, as easily as milk is poured from a jug into a cup. In this picture we see the steel in process of being poured out. When the metal in the converter is at its greatest heat, the impurities in the iron, known as "slag," float at the top, and are often blown out during the blast as white-hot cinders



Another way of making steel is the open-hearth system, the first stages of which are shown on 5696. By this process, instead of burning up all the carbon in the iron and then adding the right quantity, as in the Bessemer process, only part is burned, and whatever is necessary is added. Here the steel is being tapped.



The huge ladle into which the molten steel has been poured, either from an open-hearth furnace or from a Bessemer converter, is then moved along by a great crane over a series of molds, and a plug-hole in the ladle is opened so that in turn each mold may fill. The great ladle in the picture holds more than seventy tons.

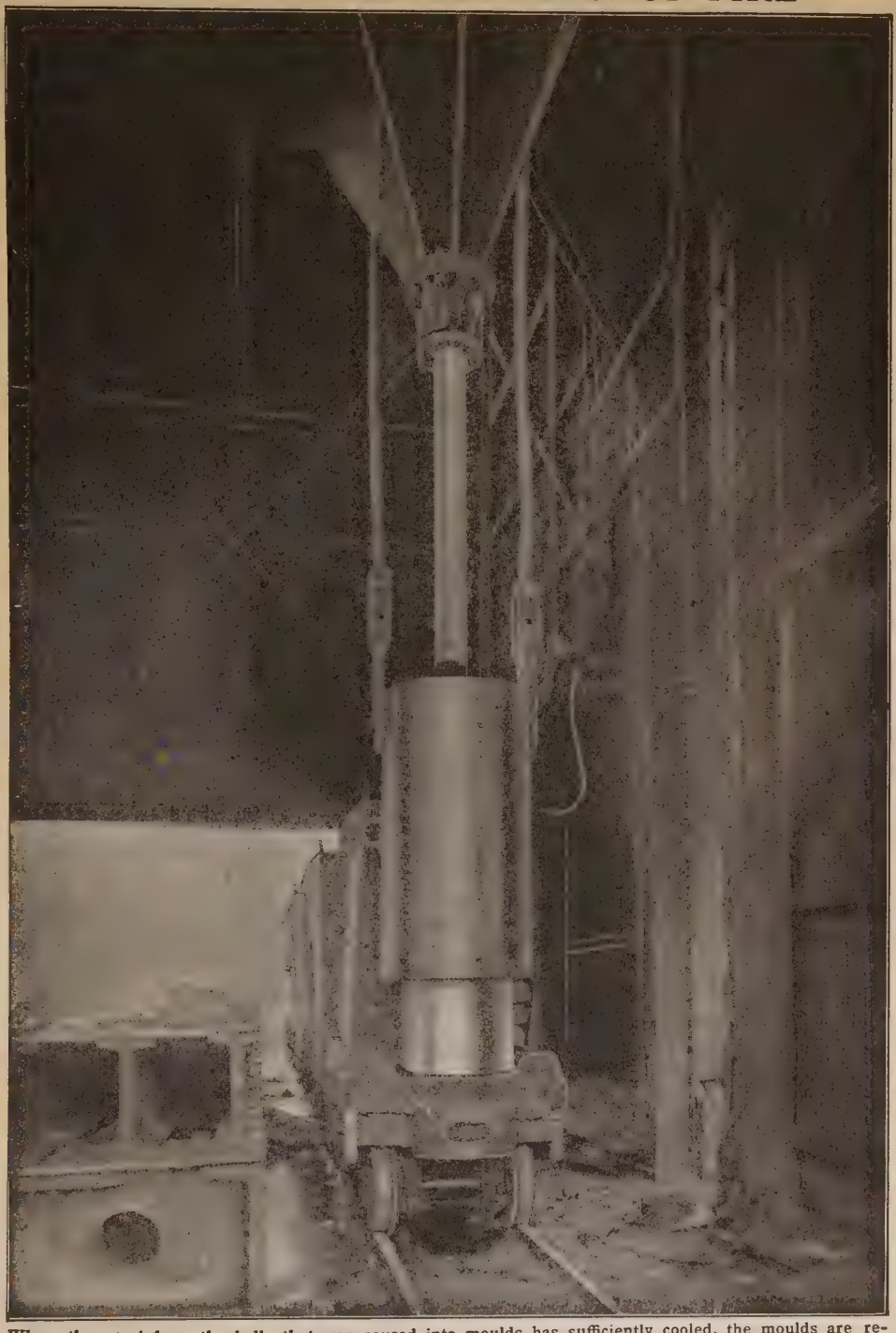
Copyright by H. C. White Co.

THE BLINDING GLORY OF MOLTEN STEEL



There are few sights more impressive or awe-inspiring than a great steel works when the blast is being blown through the Bessemer converters, or the fiery liquid is being poured out into ladles. It is in such a place and at such a time that one realizes the marvelous power and greatness of the mind of man, that can invent and carry out such tremendous processes. Here is liquid fire sufficient to destroy a city and slay ten thousand men if once it got loose, and yet, by sheer power of the human mind, it is under absolute control, and is handled as safely and with as little concern as the housewife handles milk. From this picture we get some idea of the wonder of molten metal.

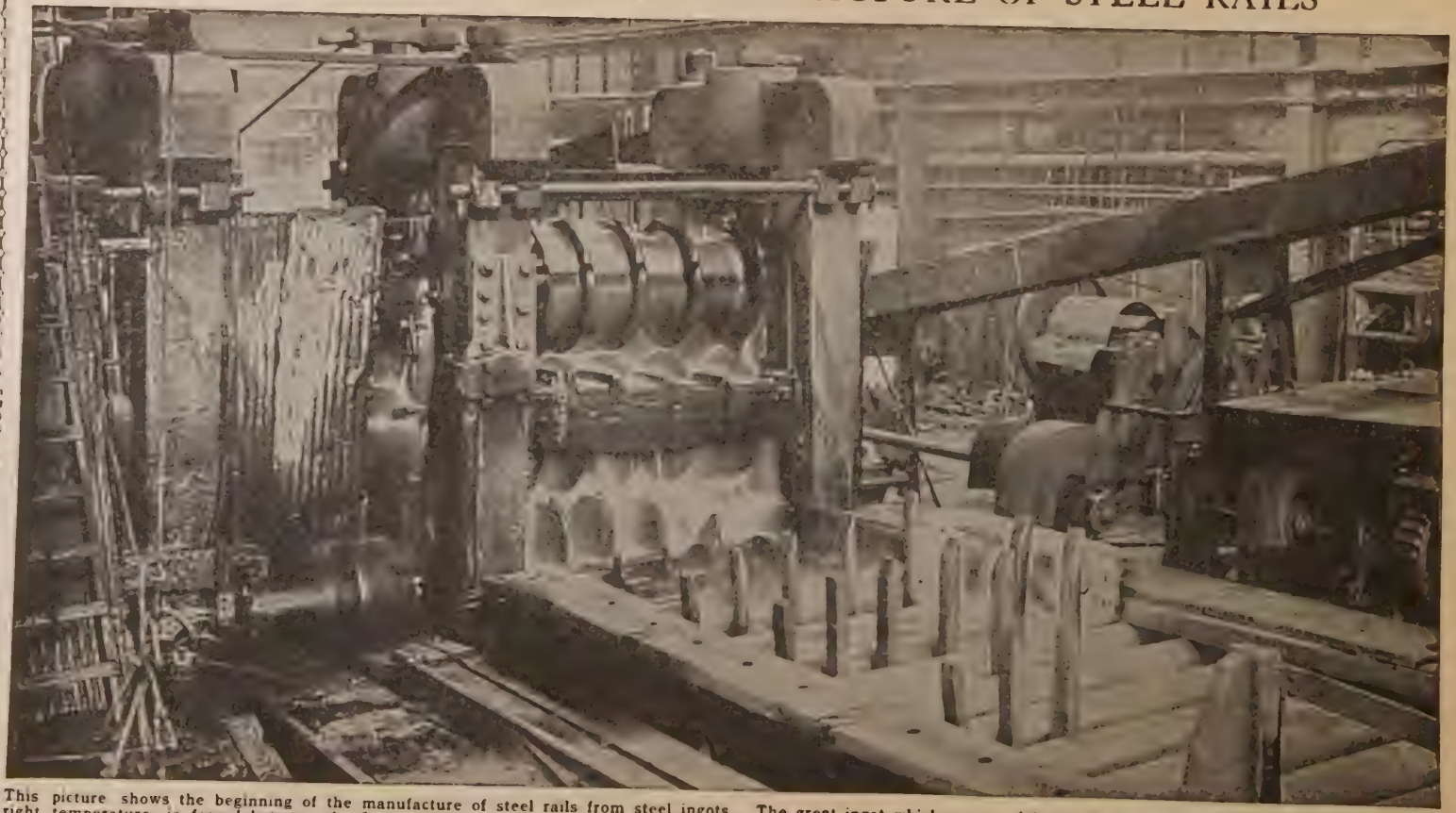
Picture by courtesy of United States Steel Corporation.



When the steel from the ladle that was poured into moulds has sufficiently cooled, the moulds are removed, and the glowing ingots are taken by a train to the rolling-mills. The procession of fiery pillars presents an extraordinary and striking sight, especially if it be dark. Iron and steel have been truly called "kings of the earth," for our modern civilization is largely founded upon them, and were they removed the whole fabric of modern life would crash. This is, without doubt, the age of steel.

By courtesy of the United States Steel Corporation.

THE FIRST STEP IN THE MANUFACTURE OF STEEL RAILS

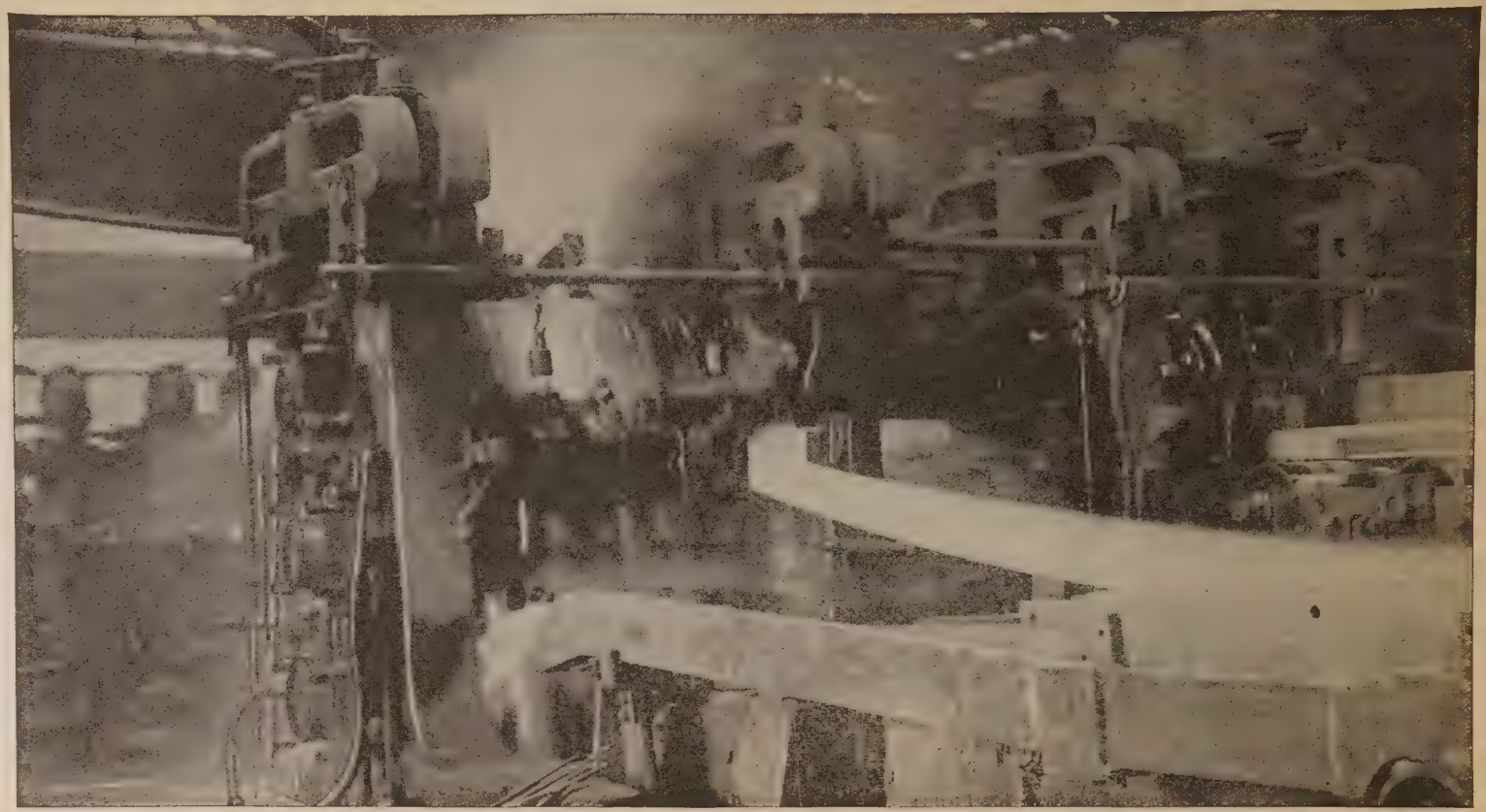


This picture shows the beginning of the manufacture of steel rails from steel ingots. The great ingot which you see lying on the rollers, after being heated to exactly the right temperature, is forced between the first set of powerful rollers, which begin to reduce the size and increase the length. It comes out in the form of a beam, which then goes through another set of rollers. There are many rolling machines in the great mills, which turn out so much of the steel that is used. These quiet, smoothly running rolls have a power, which it is almost impossible to realize. They can crush almost anything, which is placed between them.

Picture by courtesy of the Illinois Steel Co.

5702

THE HEAVY INGOT HAS BECOME A BEAM OF STEEL

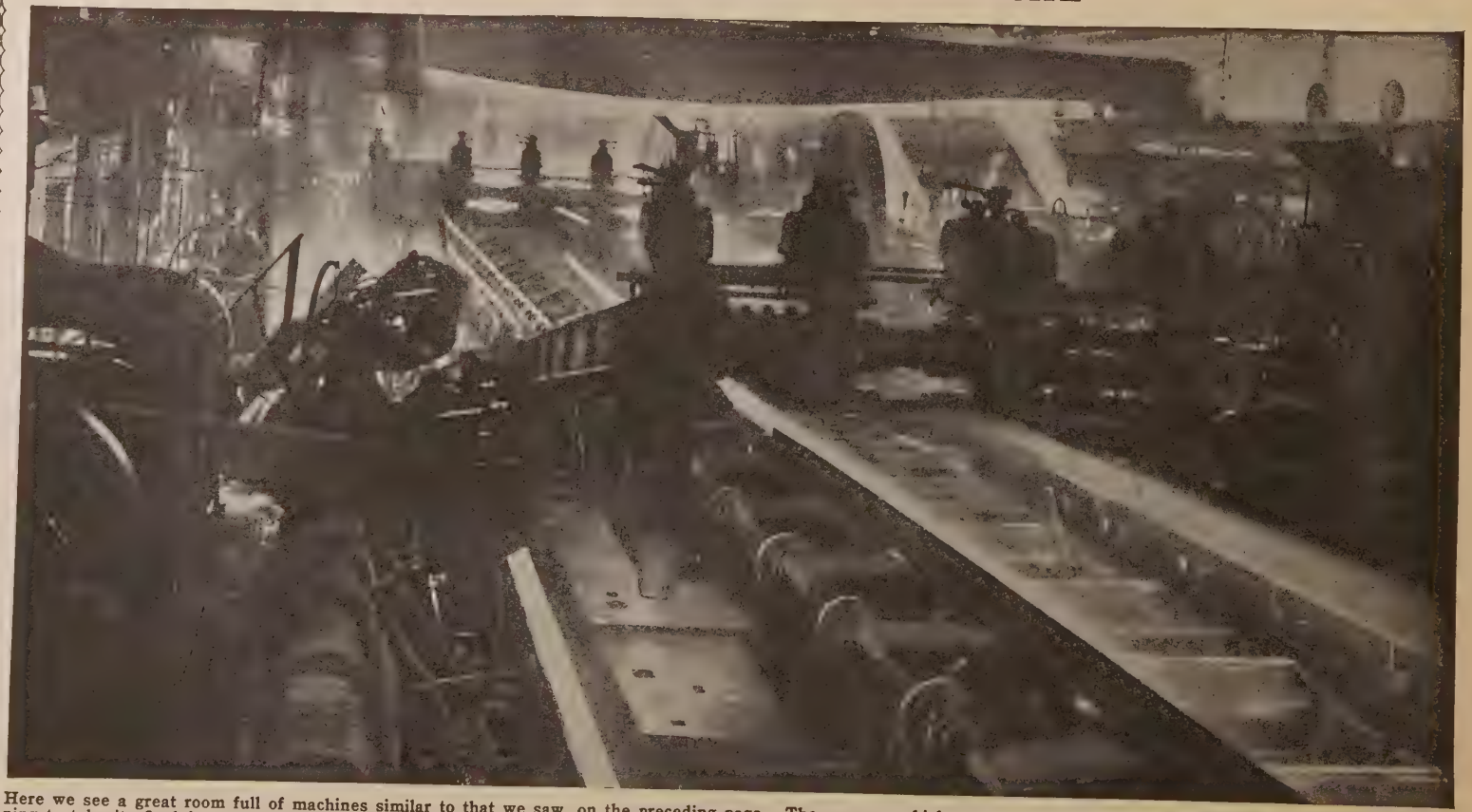


The beam which has gone through the first set of rolls shown on the preceding page now is being drawn out into rails or beams for railways, bridges, or for use in high buildings, which have a steel skeleton. The intensely hot steel in the grasp of these machines is pressed and drawn as if it were so much butter. The power of these rolls is so great that they can crush anything which comes between them. This is one of the most wonderful sights in a steel mill though some prefer to look at the great blast furnaces already shown.

Picture by courtesy of the Illinois Steel Co.

5703

THE BEAM IS BECOMING A RAIL

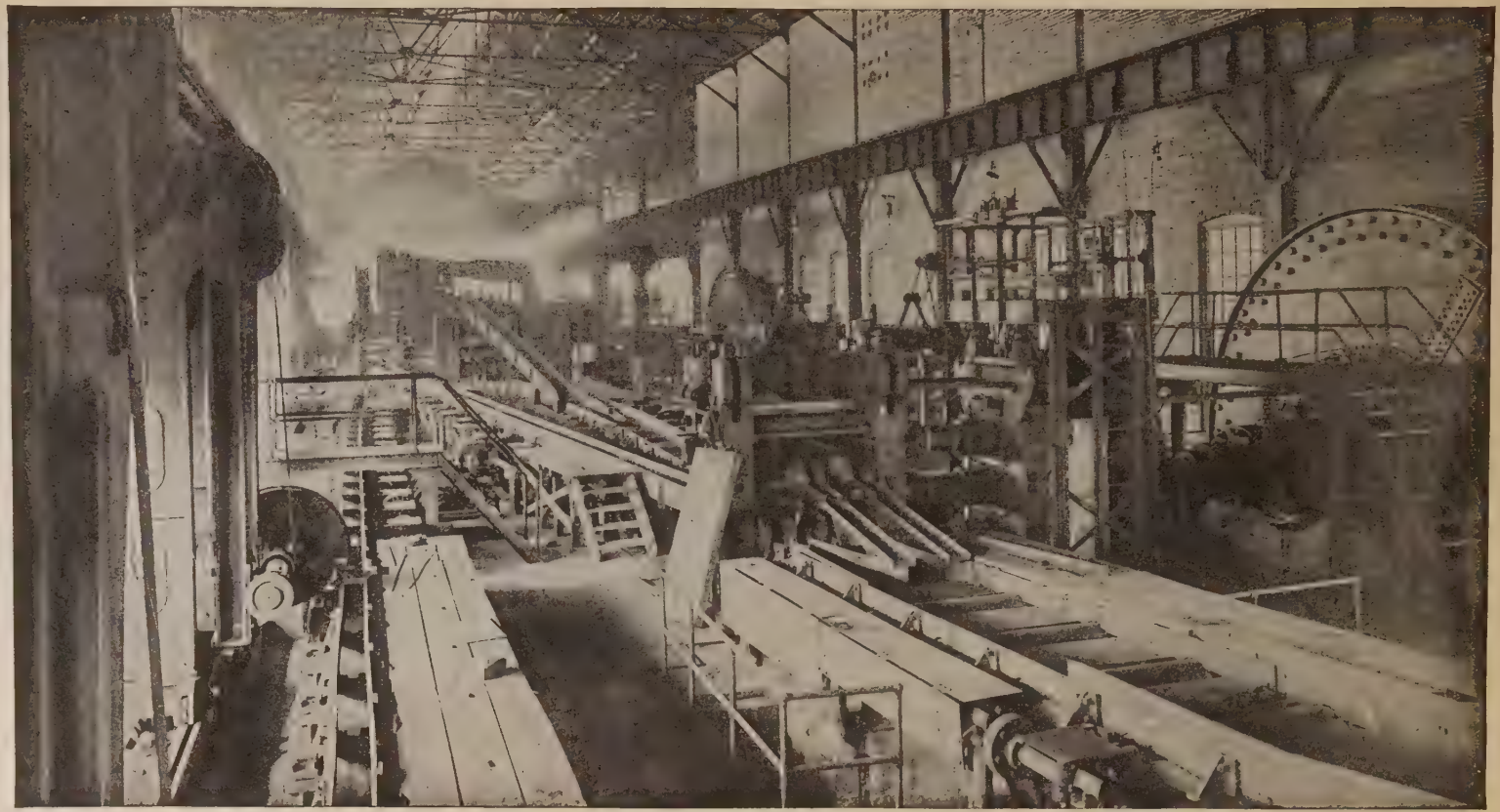


Here we see a great room full of machines similar to that we saw on the preceding page. The process, which we saw begun, has been continued and the rail is beginning to take its final form. The machine does most of the work and only the guiding brains of a few men are necessary in the large room. It has been only a little while since the labor of many men could not do at all what you see here being done easily and quickly by the mighty power of machines. Steel rails may be rolled in many different shapes as you can see if you look at a high building as it is going up.

Picture by courtesy of the Illinois Steel Co.

5704

THE INTERIOR OF A GREAT STEEL MILL AT REST

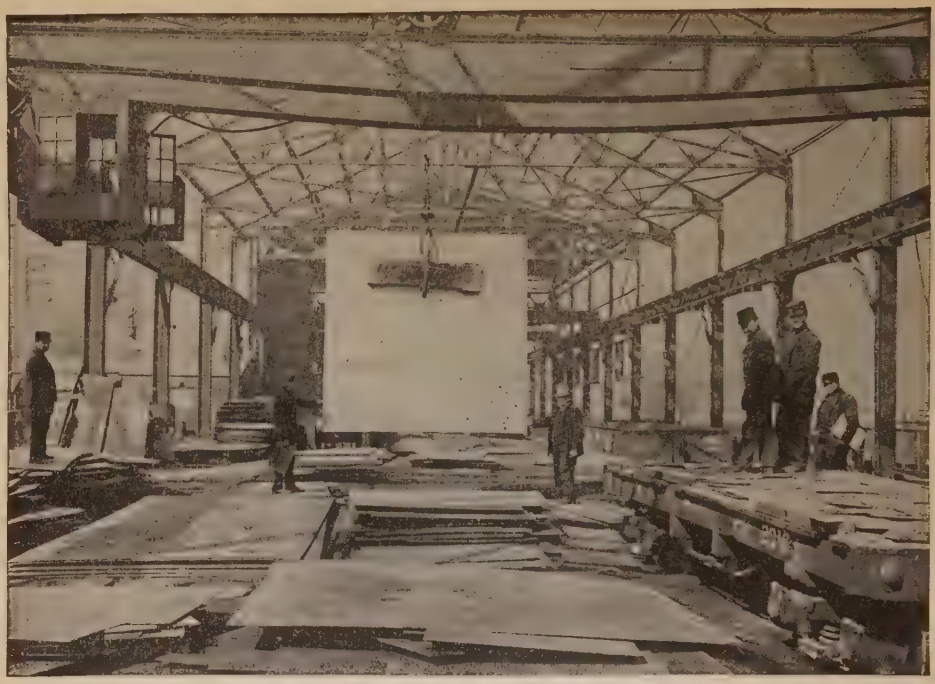


This is the interior of a great rail mill when no work of any sort is going on. It seems strangely different from the preceding pictures where we saw the whole mill filled with the blinding light of the white-hot metal, as the great rails and beams went from one set of powerful rolls to another, each set of which left them a little more like the finished product. No manufacturing of any sort is more interesting to see than a great steel mill, which some of you may have seen.

Picture by courtesy of the Illinois Steel Co.

5705

THE FINISHED PRODUCT



One of the interesting devices to save labor is the magnet which moves the heavy steel plates with so much ease. The magnet lifts the plate, and then carries it to a point immediately above the car. The current is then cut off and the plate drops. Without the magnet, handling the plates would be difficult and tedious. On another page you can see other pictures of magnets at work.



Here we see men loading heavy steel rails into a car. It is interesting to wonder where these rails will finally be used. Perhaps they will be used on a railway on which you may some day travel. Perhaps they will go to South America, or to China. Steel rails are used everywhere that railways have been constructed, and on busy roads they soon wear out in spite of their weight and hardness.



HOW REGULUS WENT BACK TO DIE

CONTINUED FROM 5630

FOR many years the citizens of Ancient Rome had been extending their domains, until in the year 270 B. C. they ruled over almost all Italy. The Romans then crossed over to Sicily, where they came into conflict with another race of brave and adventurous conquerors called Carthaginians.

A terrible struggle for the mastery now began. At first the Romans were victorious on land and sea. Elated with success, they decided to carry the war into Africa, and a large army, under Attilius Regulus, landed and swept all before them, until they came in sight of Carthage. Then, indeed, the prosperous Carthaginians roused themselves to defend their hearths and homes, and utterly vanquished the Romans. Regulus and a host of Romans were led captive into Carthage.

The war, however, went on until after five years the losses of both sides were so great that the Carthaginians hoped that peace could be made. They summoned Regulus, the captive general, before them, and said:

"We are weary of the war, and are sending an embassy to try to arrange a peace and an exchange of prisoners with your senators at Rome. Go you to Rome and prevail on them to agree. But first give us your word as a Roman that, if you fail, you will return to captivity here."

When the embassy reached the gates of Rome, Regulus stood still and cried:

"No longer am I either a citizen or a senator of this great city; neither will I enter within her walls, nor will I take my seat in her noble Senate."

On learning of this resolve, the Senate sent certain of their number to persuade Regulus to come into Rome. In the Senate he refused to give his opinions until commanded. Then the undaunted Regulus spoke out courageously:

"To no purpose is it to ransom prisoners who have ignobly yielded while they still bore weapons in their hands; let them be left to perish; let war with Carthage go on till Carthage be conquered."

His counsel prevailed, and the unsuccessful embassy returned home. With them, true to his word of honor, went back the bold, resolute patriot, though he knew that he would receive little mercy at the hands of his captors, whose hopes of peace and prosperity he had so stubbornly overthrown.

Tiber's banks were crowded with his fellow-countrymen as he embarked on the ship that was to bear him across the sea. It was the most glorious moment of his life as he stood on the ship bidding farewell for ever to those Roman senators, to whose wavering courage he had given fresh life.

And so Regulus entered Carthage once more, and his counsel was repeated to the cruel Carthaginians. They had not enough nobility of spirit to reverence a brave patriot, but instead devised horrible tortures and put him to a most cruel death.

OUT OF THE DEPTHS OF THE EARTH

"FIRE! Fire!" the dread word sounded and gathered volume. Smoke, first in little jets and then in belching masses, spurted and burst out from sheds and engine-houses at the shaft of a great lead mine in Missouri. Fanned by a strong wind the flames gained in fury, and as the timber-curbing in the shaft caught and burned, hot embers fell into the shaft, and heat and smoke descended. The pump was the next to go, and as that stopped working, men looked at one another with drawn faces, for there were two men in the mine. In the sump at the foot of the shaft the water would be filling up—seventy-five, one hundred gallons a minute. The precious air would so soon be exhausted.

"To the drill-hole!" shouted the foreman, and a score of willing helpers rushed to pump air in through a six-inch vent. They met with little success, and the air that issued from the hole was so hot as nearly to scorch the faces of the men who stood over it. For a while they could hear the imprisoned miners near the opening, then the sounds ceased. Men no longer looked at one another's faces, and women fainted.

"I'm going down," said Chew, the stationary engineer. A wet apron was tied over his mouth and nose, and he was lowered into the shaft by means of a rope and a windlass. Forty feet down the air was so hot that he was nearly overcome. He was drawn to the surface, and lay there, limp, gasping, and inert.

"Put the rope on, men," said one of the miners. "We can't let those chaps go!"

He, in turn, was lowered through blinding smoke and scalding steam until he reached the floor of the mine, a hundred feet down. Chew, by this time, had recovered, and insisted on going down the shaft a second time. They soaked the apron again and bound it over his mouth and nose. Once more the rope was secured and he swung clear and began to drop. He reached the foot, and joined the miner who had gone down before him.

Which way to go? The workings stretched in every direction away from the shaft, and they could only count on a few moments' strength and safety. They chose the path that led most directly to the vent-hole, since it was there that the men had last been heard. Choked at every breath by acrid smoke, they staggered along, finding their way by feeling the rough sides of the workings with their hands.

Suddenly, Chew gave a muffled cry and seized his companion's arm, pointing ahead. They darted forward and they reached a figure, huddled against the wall and bending over a black prone mass. The miners were found! One was completely unconscious, and the other dazed, blinded, and almost helpless. There was not a minute to lose. With the unconscious man between them, Chew and his companion returned to the shaft, and gave the signal to make ready to hoist. Then they secured the rope about the helpless body, and only waited to see it lifted before starting back to the other prisoner. Ten feet, twenty feet, and the miner fell down, violently sick.

"Go on," he gasped, "I'm done!"

Chew had now two men on his hands, and knew that his own resistance was nearly at an end. As rapidly as possible, he assisted the miner back to the shaft and sent him to the surface, then for the third time turned back, groping through the blinding pall back to the niche in the wall. The other man was still alive and able with some assistance to walk, and after what seemed hours they reached the bottom of the shaft.

Would the knots ever tie? How hot the rope had become! There was no room in Chew's mind now for any thought but his anxiety lest he should forget the signal to hoist. At last everything was taut, and the burden lifted. It disappeared and he waited, and nothing came. Hours passed—it seemed to the suffocating man who could hear nothing but the sledge-hammers in his temples. What had become of the rope?

"Hurry, men, hurry!" he shouted, and something swung against his face. It was the rope, and with slow and bungling fingers that worked in unwilling obedience to the obsession in his brain he bound himself and jerked the rope. He knew no more until he awoke hours later in his own bed.

"The——others?" he said haltingly.

"All safe," smiled his wife, with eyes that seemed to Chew to have felt the smoke too, so was their clearness dimmed.

A BLUEBERRYING PARTY

"MOTHER, the blueberries are ripe; mayn't we take our cans up on the hill? Do let us, ple-e-e-ase!" The chorus came from the two little Parkers, who were spending the summer months in the country that year with mother and their governess.

"Why, yes," said Mrs. Parker, "if you like. Shall we ask Jack and Susy Miller to come too? Since Mrs. Miller has been ill they have had a hard time, and it would be a treat for them."

Jim looked at Maisie and Maisie looked at Jim. They did not care very much for the Millers, who were such solemn children, occupied for the most part in feeding chickens or catching horses or drawing water.

"All right," they agreed dully. Mrs. Parker smiled to herself, but she wanted Jim and Maisie to enjoy their holidays, and so she added:

"Let's take our supper: we can have it in farmer Miller's old shack in the hill pasture. You shall pick all the blueberries that you can carry, and Miss Pierce and I will have supper ready for you by the time you have finished."

There was no hesitation now in the children's agreement. They ran off to invite Jack and Susy, and to bother everyone about the farm for the best cans.

It was lovely on the hill that afternoon. The children thought so as they picked the ripe fruit, or lay down amid the song of the bees and felt the wind play over their faces. Mrs. Parker thought so too as she and Miss Pierce sat in a cool corner in the old shack, through whose holes the air came so freely. At supper even the Miller children forgot to be solemn, and Jim choked twice in his milk. At last, "Come," said Miss Pierce, "help me to pack the baskets. Mother wants to start down the hill in time to see the sunset."

As their little party emerged from the shack, Mrs. Parker, who was walking first, cried out quickly, "Get back and shut the door—the bull is loose." Farmer Miller's great red bull that lived in the barn had got off his chain and was charging down upon the shack.

They shut the door not a minute too soon: the great creature with lowered head butted heavily against it, snorting and bellowing angrily, and pawing the ground. Maisie began to cry, but Susy put her arms round her, and the boys ran from hole to hole in the wall, excitedly reporting on the animal's movements.

"It has gone to the front now," called Jack.

A crash bore witness to the fact as the bull put his head through the window. Meanwhile, Mrs. Parker and Miss Pierce were deep in whispered consultation: together they examined the holes in the walls of the shack and tested the light doors.

Then Miss Pierce called the children to the front, and Mrs. Parker slipped out and went round the shack, hoping to entice the bull to the rear while the others escaped. When the bull saw her, he lowered his head and she had to run back to the door whence she had emerged. Just as he charged she shut the door and threw her weight against it, trying to hold it; but the bull forced it partly open and thrust its wicked head through the opening.

Mrs. Parker had a broken shovel with a handle two feet long in her hand, and with it she struck the bull on the head again and again, still holding the door with one foot. She was not defeating it, nor even seriously hurting it—so thick was its skull—but she was engaging its attention and gaining time while the others escaped. Over its lowered head the brave woman could see that Miss Pierce had reached the high fence bounding the pasture and had already got Maisie over, while the boys were climbing by themselves.

A few more blows, and then, as she saw the last of the children and Miss Pierce on the top of the fence, she darted back into the building. Thankful for the holes in its walls which before had so alarmed her, she climbed quickly through one, tearing her dress and bruising her shoulders as she went.

The bull, which had become more enraged in its fight with Mrs. Parker, became confused in the shack, and did not follow her. Breathless, she reached and scaled the fence and dropped—laughing and crying at once—into the children's arms.

"Let's never go blueberrying again," said Jack.

THE NEXT GOLDEN DEEDS ARE ON PAGE 5949.

ORANGE GROVE AND MOUNTAIN PEAK



Southern California offers many charming views, but few are more wonderful than this glimpse of a snow-covered mountain and a fertile plain, framed by an orange branch. It was made near Los Angeles, one of the most attractive cities in the whole country. There are many orange, lemon and olive groves in this region, and the mountains contain many valuable minerals. The growth of the city has been phenomenal, but factories have not been allowed to spoil the appearance of the city.
Photograph by Putnam & Valentine.



A View of a Stock Farm in Colorado.

THE STORY OF THE WEST

CONTINUED FROM 5600

WHAT is the West? This question is difficult to answer, for it has meant different things at different times, and now means different things in different places. The people who live near the Atlantic sometimes speak of Chicago, St. Louis, or Omaha as West; but to the people who live in Nevada or one of the Dakotas, these cities belong to the East. No one can say where the real West begins.

Since much more than half of the people live east of the Mississippi River we shall call the West the country beyond that great stream. It was not a part of the United States in the beginning, but came after the Constitution was adopted. Some was gained by purchase, some by conquest, and some by discovery and exploration. We have told you of the Louisiana Purchase, the annexation of Texas, the Mexican Cession, and the Oregon Agreement in other parts of our book, and shall not repeat it here.

WHERE DID THE PEOPLE OF THE WEST COME FROM?

When these great additions to the territory of the United States came, few white men lived in the vast region, and the most of them were Spanish or French. Soon Americans from the East crossed the Mississippi in great numbers and the region began to be made into states. Louisiana was the first state made, but we usually call it a Southern state. The territory is so great that it was not until 1912 that the last bit was made into the state of Arizona.

When the Census Office in Washington is counting the people, it divides the states beyond the Mississippi into four groups. The West North Central, the West South Central, the Mountain and the Pacific states. We usually speak of the West South Central states as Southern states, though sometimes they are called the Southwest, but this name is also used sometimes in speaking of Arizona and New Mexico.

More than two-thirds of the land in the United States is beyond the Mississippi, but it does not yet contain one-third of the population. The population of the Mountain States and the Pacific States increased very rapidly between 1900 and 1910, and has grown even faster since.

THE MIDDLE WEST AND THE FAR WEST

Some of the states near the Mississippi have been settled a long time and

Copyright, 1918, by M. Perry Mills.

have large cities, and many factories. Some are beginning to be quite old states, and are sometimes called the Middle West. The Mountain and the Pacific states are younger, except California and Oregon. Population first went to California because of the discovery of gold, and to Oregon because of the furs. For a time these were states, while between them and the other states along the Mississippi were wide stretches of land over which the buffalo and the Indian roamed, and in which there were few white people. All of it has now been made into states.

Probably many of you think of the West as being full of cowboys and

falls. In some parts the air is cool and bracing, in others warm and humid. Forest giants seem almost to touch the sky in some parts, while in others you might travel many miles without seeing a tree.

There is some of the most wonderful natural scenery in the world. We have shown you some of the mountain peaks, the Big Trees of California, a few of the wonders of the Yellowstone, and the course of the Colorado River, which has cut its bed deep down into the earth. Everything seems to be on a large scale. Trees, mountains, lakes and plains, all are immense.



The immense Union Station at Kansas City, Missouri, into which all the trains run, is sometimes called "The Gateway of the West." It was finally completed in 1914, and is now the third largest in the United States.

By courtesy of the Teachenor and Bartberger Engraving Company.

painted Indians, who spend most of their time on horseback, riding recklessly over the hills and plains. There are some Indians, to be sure, but most of them wear ordinary clothes and send their children to school. The cowboy has not disappeared entirely, but he is going too. The great ranches are being cut up into farms, or else sheep are replacing the cattle. Cowboys would be out of place on a sheep ranch.

THE RICHES OF THE MOUNTAIN AND THE PACIFIC STATES

We are particularly interested now in the Mountain and the Pacific states, eleven in all. They include many varieties of surface, soil and climate. In some of them are high mountains, on the top of which the snow never melts. There are real deserts in which rain seldom

Perhaps all this bigness has affected the nature of the people, for Western people are different. Nothing seems to hold them back when they decide that something should be done. The greater the task, the more determined they are to accomplish it. Some of our pictures will show you the kind of things they have done. A small Western town will decide that it must do something, and while an Eastern town would be discussing the matter, the Western town, no larger in population, would have gone ahead and finished.

THE WESTERN CITIES PREPARE FOR THE FUTURE

Most of our Eastern cities grew slowly in the beginning, and the people did not expect them to grow very large, if they thought about the matter at all. If you



A few years ago Kansas was almost entirely an agricultural state, and not very prosperous. Now it is becoming a wealthy commonwealth, and manufactures of every sort are developing. Wichita has grown very rapidly recently and is one of the busy cities of the central West. It has large stockyards, is one of the largest markets for broom corn in the world, and is in the centre of oil and gas wells.



Picture by Underwood & Underwood, N. Y.

Galveston, Texas, might be called Western or Southern. It is built on an island in the Gulf of Mexico. It is the greatest cotton port in the world, and its piers allow over a hundred ships to take on or discharge cargoes at the same time. The United States has made the defences of the city very strong.

walk about most Eastern cities you will find the older parts with narrow streets, and few open spaces. This is not true of the New England villages, of course, but these wide streets were not left for travel alone.

Every Western city expects to be as large as Chicago, or New York, some day. Therefore it makes its streets broad, and leaves open spaces. Plenty of park space is reserved before it has been covered with houses, and becomes so valuable that the cost will be too great. Some of the cities of the Far West have wonderful systems of parks, and playgrounds for the children. What would not many Eastern cities give to have broad streets? Boston has spent millions of dollars widening the streets in the business section, and still they are too narrow.

Another reason for the open minds of the Westerners is that they have come from every part of the United States. New Englanders, New Yorkers, Southerners went to the West to live. They worked together and talked together, and each found that the other had something to give him. They found that they did not think alike about a great many questions, and this made all of them wonder whether their own ideas were the only right ones. Perhaps there was truth in what the other men thought? So the Westerner decided that every man had the right to think what he chose, if he did right. We say that the West is tolerant, and this is what the word means.

What the Westerners Believe About Work

The Westerner believes that every man ought to work. He does not think that a man should be idle, even if he has wealth enough to buy what he needs, but he does not think that a man ought to work all the time for himself. He ought to work a part of the time for his town, his county or his state. Busy men give much valuable time to help make their towns better, and to make them better known.

The states of the Far West grow most of the things that are produced further east. They do not grow so much wheat and corn, but they do grow a great deal. They are beginning to grow cotton, too. In some parts of the West there is too little rain to grow good crops. The people themselves, and the United States government, too, have built great dams across some of the streams from the mountains and save the water for a time of need. They have many cattle, and most of the sheep in the United States are in these states. Every one of these states has many sheep, and some of them have millions. Thousands are found on some of the great ranches. Did you know that ostriches flourish in the warmer states of the West?

The Delicious Fruit Which Is Grown in the West

The fruits of this region add much to our happiness and health, for one is not likely to be healthy unless one eats fruit. California grows oranges, lemons, olives, figs, apricots, prunes, pears, peaches, cherries, strawberries, almost every kind of fruit, in fact, but Oregon declares that it can produce better strawberries and apples. Washington declares that its apples are the best. The beautiful apples, so carefully packed, that you see in the fruit store came from one or the other of the Pacific states.

The mountains of the section are nature's storehouse. In every state are rich mines. There is much coal, and there are whole mountains of copper. You have been told that most of the gold and silver of the United States proper comes from these states, and there are many other metals, too. Some of them you may have never seen, but they are very valuable. Such things as tungsten, platinum (which is more valuable than gold), antimony, molybdenum and many others come from these states. There are gem stones, too.

There is much petroleum. California has not much coal, and so it burns oil instead to run its factories; or else harnesses some of the swift streams and forces them to make electricity, which is carried over wires perhaps a hundred miles or more, there to turn the wheels of a factory, or to light a town.

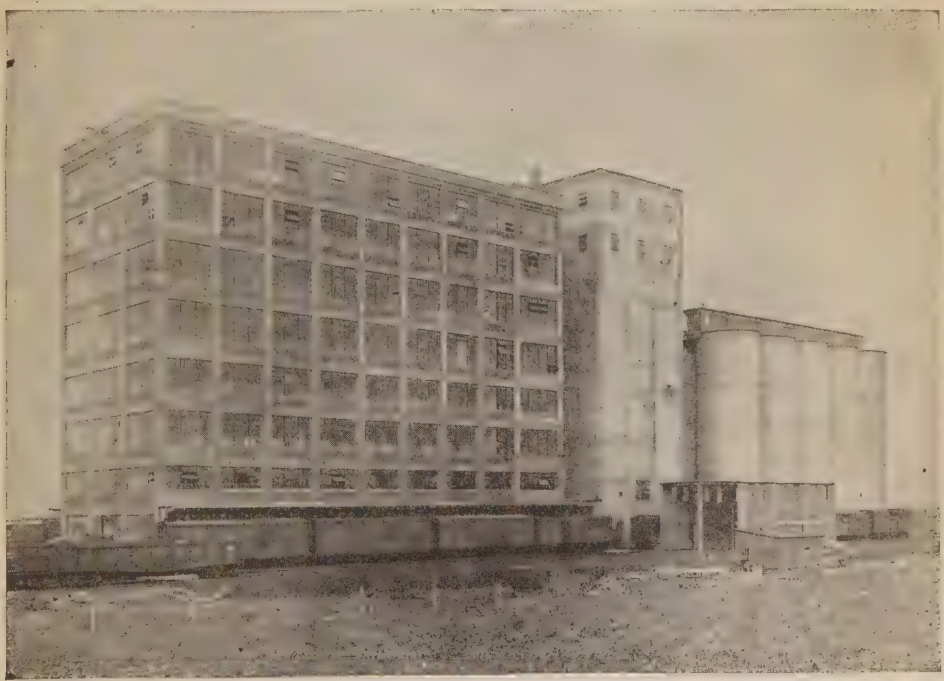
These are some of the things which are making the West rich and prosperous. We have not had space to tell of the great colleges and universities which are growing up there; we have said little of the factories; we have not said anything of the immense shipyards, where great ships are built. But we cannot tell you of all the wonders of this section.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5825.

TWO SIGHTS OF THE GREAT MIDDLE WEST



The population of Oklahoma was large before it was admitted to the Union, and has continued to grow rapidly. Though it was admitted as a state only in 1907, it was the twenty-third state in population in 1910, and its rank is higher now. This is the magnificent state capitol building at Oklahoma City. The state now ranks well at the top in the production of petroleum, and has many mines of considerable value, besides much very fertile land, which yields large crops of various agricultural products.



Photograph by Busch.

Great flour mills like this help to feed a hungry world. It is situated at St. Joseph, Missouri, just across the Missouri River from Kansas, and can make 12,000 barrels a day. The round tanks are the grain elevators, which will hold 2,500,000 bushels of grain. The railroad tracks bring the grain to the mill and take the flour away. Kansas is one of the leading states in the Union in the production of wheat, and Missouri grows much more than is consumed in that state. A supply, therefore, is close at hand.

WOOL, FRUIT AND HAY IN NEW MEXICO



New Mexico has become one of the leading states in the production of wool. Here we see wagons loaded with wool coming to the town of Roswell, from which it will be shipped to be manufactured into cloth.



This thrifty young orchard is just beginning to bear. Notice that peach and apple trees are set in alternate rows. The land is so nearly level, and the trees so nearly the same size that the whole orchard looks as if the tops of the trees had been cut off evenly with a great scythe.



Though alfalfa is a common crop, grown for hay, it is not really a grass, as so many people suppose. It belongs to the same family as peas, beans and clover. Alfalfa has very long roots, which can seek water far below the surface. Several cuttings can be made every year, and the yield is heavy.

Photographs by Wilfred Smith, Roswell, New Mexico.

A CITY NAMED FOR AN INDIAN CHIEF



Seattle contains some of the largest lumber mills in the world, which is not surprising, as Washington is the leading state in the production of lumber. The contrasts of light and shade in this picture of one of the great shingle mills make it really beautiful. There are many kinds of manufacturing plants in the city, which has grown so rapidly and shown so much enterprise in so many different directions.



The city is beautifully situated between Puget Sound, which opens on the ocean, and Lake Washington. These are the locks of the great Lake Washington Canal, which connects the two and makes the harbor space much longer. The largest ocean-going ships, either merchant vessels or war ships, can pass through the locks.

Pictures by courtesy of the Chamber of Commerce.

FRUIT-GROWING NEAR LOS ANGELES



This is a part of a grove of 1,800 acres of olive trees. The men are picking the olives for oil. The pickled olives you generally see are picked while still green, but when the oil is to be extracted they are picked just as they ripen. Ripe olives are also pickled. Though many thousand acres of olive trees are grown in the United States, we must still import many olives and much oil from abroad.



Through irrigation precisely the right amount of water can be supplied to crops in groves. Here you see the streams of water being led where they will do the most good. The trees are in full bloom and need the water which is being supplied. Notice the difference between the dry and the wet ground.
Pictures by Putnam & Valentine.

PORTLAND, AND ITS FAMOUS HIGHWAY



The Columbia River highway runs, for forty-seven miles, beside the river. It is a joy to motorists, and the trip over it is always much enjoyed, because of the smoothness as well as the wonderful scenery.



The City of Portland, Oregon, is one of those Western towns which have grown up like magic, and its business district is filling with high office buildings like this. This belongs to the Northwestern Bank.



Some institutions prefer to occupy the whole of their buildings. This is the home of the First National Bank, and like so many bank buildings, resembles a Grecian temple. Portland is the largest city in Oregon, has an excellent harbor, and large foreign commerce, and also has many and important manufacturing establishments.

Picture by Gifford & Prentiss.

THE CITY HALL AND SEAL ROCKS



The old City Hall in San Francisco was destroyed by fire in 1906, but this magnificent structure, erected to take its place, far surpasses it in beauty and convenience. It is a part of the new Civic Centre, which includes also a Municipal Auditorium, a state building and a public library. All these buildings face upon a public square, and together form a group hardly to be equalled in any other city in the country.



Seal Rocks, in San Francisco Bay, are one of the sights of the city. From the Cliff House thousands have watched and heard the seals as they clamber over the rocks, which, as you see, are almost covered with them. They are not fur seals, but sea lions. One is the Steller sea lion, which sometimes weighs as much as 1800 pounds. The other is smaller. Both range north along the Pacific Coast to Alaska, or even beyond.

THE Wise Man here tells us how by giving sympathy we can help those who are in trouble. He explains to us how it is that spectacles give so much assistance to us in seeing if our eyes are not very strong. In this place the Wise Man gives us the answers to several very interesting and puzzling questions. He explains how it is that an ugly bump appears if a boy bumps his head against anything hard, the great value of the metric system which some of us find so hard to learn, why it is a bad thing to use headache powders. When we look ruefully at a hole which has suddenly appeared in the knee of a stocking, we wonder where the wool, or silk, or cotton can have gone. The Wise Man has an answer for this too, and also for the much bigger question, Why does the sea not fall out when part of the world faces down? He tells us about beautiful voices, how it is we get more light from a candle if we have mirrors in the room, and how our brains go on developing and growing stronger after we have reached our full height.

DOES SYMPATHY HELP US?

CONTINUED FROM 5640

SYMPATHY does help us, and it *is* help just as truly as money would be, and it often helps where money would be of no use at all. This we see every day when people are suffering, not from lack of money, but from illness or pain or a great sorrow. In such cases sympathy is worth all the world to them.

We are so made that sympathy, besides comforting the mind, may even relieve the pain. We all know how the sympathy of someone we love, showing itself by quietly stroking the forehead, may really relieve a headache. The interesting point about this power of sympathy is that it must come from a person with whom we are "in sympathy," as people say.

If it comes from the wrong person it will do more harm than good. Very much of the success and usefulness of the most successful doctors and nurses comes not from their skill, but from their power of sympathizing with their patients.

HOW DO SPECTACLES HELP US TO SEE?

Of course we understand that the spectacles do no seeing themselves, and there must be many kinds of difficulty in seeing for which no spectacles can do anything. The brain may be injured in its vision quarter, the nerve of the eye may be pressed upon or torn, the curtain at the back of the eye may be starved of blood or poisoned, the lens of the eye may be opaque instead of transparent, and so on. In such cases no spectacles are of any use. All they can do is simply to bend the rays of light passing through, in such a way that the rays fall rightly upon the curtain at the back of the eye.

It is often expected that spectacles will make people keen-sighted, but that is quite a mistake. One man with eyes quite healthy and sound, but perhaps needing spectacles, may get a pair which suit him perfectly but he may still be quite unable to make out things at a distance which another man may see quite clearly, with or without spectacles.

Glasses may either bend rays of light inward toward each other, so that they come to a point sooner than they would otherwise have done, or they may bend the rays rather away from each other—or, at least, make them come to a point much later than they would otherwise have done. The rays are all wanted to come together at the retina; so if the eye is too short, converging lenses, shaped like a burning-glass, are wanted, while concave, or hollowed-out, lenses are needed if the eyeball is too long.

Then, if the eyeball is so shaped that it does not treat rays the same way from side to side as up and down, we require a sort of barrel or cylinder-shaped lens, curved much more in one direction than in the other. When lenses are put together, one in front of the other, we have microscopes and

telescopes. But, even with the largest telescope, differences in natural keenness of eye remain, and one man will discover comet after comet where another will be unable to see anything.

CAN A MACHINE BE MADE TO COUNT?

Yes, calculating machines "count." They have no voice with which to say aloud "one, two, three, four, five," but they count for us when we press certain levers. Figures are made on cylinders or disks, which are driven by various toothed wheels. These disks are so connected that, when one disk is caused to turn ten spaces, the disk next to it turns one space. This serves for a sum in adding up. For subtraction, the disks revolve in the opposite direction. But that is simple work which any child can do. Men may make mistakes; but these machines, provided that they are in order, cannot make mistakes. They are so accurate that they are trusted more than men. All our most important astronomical and mathematical tables are worked out by these wonderful machines which man makes to be more accurate than he himself can ever hope to be. The machines are used in all the big insurance and large business offices. Early in the nineteenth century, Charles Babbage, a great mathematician, gave thirty years of his life to making a calculating machine, but it was not a success. The best machine in use to-day not only adds, subtracts, and divides, and shows the correct results, but actually prints the whole.

DO WE ALWAYS SEE EVERYTHING THE MOMENT IT HAPPENS?

On the contrary, we never see anything the moment it happens. Seeing is a very quick process, but yet it takes time. In the first place, when we see anything happen, the light from the objects we are looking at has to travel through space to reach our eyes. Now, light travels about 186,000 miles in a second, so when we are looking at something near at hand, or at anything on the earth, the time spent in this way is such a very tiny part of a second that we cannot imagine it.

But the stars are very distant, and lately astronomers saw something in the sky, certainly not the moment it happened, for they reckon that it must really have happened when James I. was on the throne of England and the first settlements in this country were being made. But this is not all. When the light reaches the eye, and passes through the front of the eye and reaches the nerve-cells in the retina, or curtain at the back of the eye, something which we can only call a nerve-current travels along the nerve of the eye to the brain, and through the substance of the brain to its very backmost part, where we really see things.

A nerve-current travels at about the rate of an express train—say, fifty to sixty miles an hour; so we may reckon how long it takes to travel some six inches or so, from the eye to the seeing centre in the brain. Lastly, the cells in the brain do their share, which takes more time than all the rest put together and when that is done—we see.

WHY DO WE NOT GROW UP ALL AT ONCE?

It is not in the nature of any living creature to be born full-grown. There is always a period of what is called development. In the case of the very humblest animals and plants, such as microbes, this period is so short as to be scarcely worth mentioning; whereas, as life ascends, the period of development grows longer and longer.

All development is itself a miracle, and no less than if it really occured all at once. We are beginning now to understand the reasons why it takes such a particularly long time for human beings to grow to their full size. The fact which most distinguishes our growing is the growth of the brain. This comes first, so that the development of the brain is always ahead of the rest of the body; and it has to be so for the very good reason that the growth and health of the rest of the body so largely depend upon the brain, which therefore has to lead the way. That is why a new-born baby's head is so huge compared with the rest of its body. But though the brain is the first to begin and always leads the way, it is very interesting to know that the brain is not the first to stop.

On the contrary, when all the bones have stopped growing, so that we shall never be any taller, and when the rest of the body is fully developed, say, at twenty-seven or twenty-eight, the brain is still developing, though it may not be actually growing larger in size; and it is not until many years later that a healthy man, who leads a sensible life, reaches

the height of his mental powers. Most of the great works of thought that have made the history of the deepest kinds of knowledge have been written by men fifty years old or more.

WHERE IS THE WHITE MAN'S GRAVE?

This is the name which was very rightly given in the old days to part of the coast of West Africa, when white men first went there for the riches of the district and found that those who stayed for only a short time nearly all died or came to death's door. The great cause of this was the fever called malaria. In the course of long ages, the chemistry of the bodies of the natives of a malarial district, such as the White Man's Grave, has become changed, so that they can resist the poison of malaria. The poison enters practically every one of them when they are tiny children, but it does them comparatively little harm. The white man, however, is a very easy prey, and is struck down almost at once.

WHAT CAUSES MALARIA?

The name malaria means "bad air," and people thought that the poison must be in the air which was breathed in these places. But within a short space of time, as we read on page 3202, it has been found that malaria is due to a tiny living creature which is put into a person's blood by a certain kind of mosquito when it bites him. And now, in all parts of the world where the people have enough sense, this mosquito is being attacked, and people are taking care not to be bitten even by the mosquitoes that remain.

WHY DOES AN APPLE TURN BROWN IF WE BITE IT AND PUT IT ASIDE?

This is one of many similar instances. We notice that the same sort of thing happens to some kinds of meat. When we cut a slice, the surface left is at first pale, but before very long it turns quite a dark brown. Now, we know that when various metals are left exposed to the air, their surfaces change color. This is true, for instance, of iron; and we say that the iron rusts. The easiest way to understand the change in an apple is to say that it rusts. That, I believe, is more than a mere comparison. The change in color is certainly due to a true oxidation; something in the apple combines with the oxygen in the air, and the change of color is produced. Now, it is quite probable that it is the iron in the apple which is responsible for this quick oxidation, and for the change of color which is produced by it. The color of the apple after the surface has been oxidized quite suggests the color of oxidized iron, and it is the case that probably all the colors of all kinds in all living things are due to the iron they contain. Chemists know how rich and various are the colors of the compounds of iron—brilliant red, the most intense blue, vivid green, and so on, and these colors suggest to us the cause of the colors of life in all its forms.

WHY DO FLOWERS DROOP IN A HEATED ROOM?

The shape and the balance of a flower very largely depend upon the water it contains. This is no doubt due in some degree to the mere presence of the water in itself. In a heated room the air, because it is heated, can hold a good deal of moisture. This means that the water rapidly leaves the flower through every part of its surface, and so the flower becomes dried up, it withers, and droops. This will happen much less rapidly, of course, if the stalk of the flower is placed in water which it can suck up to some extent to make up for its rapid loss of water to the air.

But there can be little doubt that more than the question of water itself is concerned. All life is lived in water, and the very life of the flower is interfered with directly the supply of water falls short. Yet, again, a flower is meant to live in the open air. Such a flower as a rose, or any other flower that grows in the open air in this country, has its fibres and tissues so put together that they shall be stiff enough at the ordinary temperature of the open air. But the fibres which were stiff enough at such a temperature may not be stiff enough when the flower is heated, for just the same kind of reason as that which makes sealing-wax soften when it is heated.

WHAT IS THE ADVANTAGE OF THE METRIC SYSTEM?

The advantages of the metric system are almost endless. They are so great that the metric system is used all over the world by men of science of all kinds; it is used in business in most parts of the world now, and every year it is being more generally used. All the measures in it are tens or tenths of the measures

next to them. Instead of having 12 inches 1 foot, 3 feet 1 yard, 1,760 yards one mile, and so on, we have all the measures in the metric system going by tens.

This means that every kind of reckoning is made very simple because, in order to reduce one measure to another, it is merely necessary to move a decimal point along in one direction or the other. The huge labor of multiplying and dividing, made necessary by other measures, is all done away with.

Still more important is it that under the metric system all the different kinds of measures are related. In other systems, measures of length and of weight and of bulk, for instance, are all quite different; no measure of one of these kinds has anything particular to do with any other, and so there is more confusion than ever.

But in the metric system all these different kinds of measures are related, so that it is the easiest thing in the world to reckon the relation between bulk and weight, length and capacity. Then, again, the metric system agrees with the best method of measuring heat, which also goes by decimals. The time will have to come, and that before very long, when the metric system will be used all over the world, and will also be applied to coinage and money in general, to the great advantage of children who have to learn arithmetic.

WHY DO WE PRESS HARD ON DOWN STROKES WHEN WRITING?

One reason for this is the way in which pens are made. Whether we use a quill or a metal pen, it is so made that it runs more freely, if pressed, coming downward than it does going upward, for when it goes upward, if pressed, the point is apt to stick in the paper. That, however, is certainly not the whole reason. Even when we use a pen that has a turned-up point, or when we use a pencil, we find that we tend rather to press coming downward. This remains true even if we make the experiment of writing with the top end of the pencil turned away from us, instead of turned toward us. There is no doubt that the real reason is to be found in the way in which our hands are made.

The muscles that bend our fingers are vastly stronger than those that unbend them. Bending them is, of course, the important thing that requires strength, because it is by bending the fingers that we hold and grasp. The muscles that unbend are, comparatively, very feeble, just as the muscles that open the mouth are feeble compared with those that close it. So we naturally use more force on the strokes we make with the closing than with the unclosing muscles.

IS A LIGHTED CANDLE IN FRONT OF A MIRROR EQUAL TO TWO CANDLES?

There is no doubt that when we put a candle in front of a looking-glass we seem to see two candles, and there is also no doubt that both from the real candle and from the reflected candle real light comes. If we have two glasses opposite each other, or if we have a light in a room with a number of mirrors, it seems as if we could multiply the light almost to any extent.

This has puzzled many people, for something tells us that we cannot get something out of nothing, and yet it looks in this case as if from one candle we were really somehow getting the light of two candles, or of many more. But what really happens is that we are getting proper value for the light of one candle.

The difference is tremendous if we take a candle and put it into a room with black walls, and then take the same candle and put it into a room the walls of which are lined with mirrors. In one case a great proportion of the light is absorbed, or sucked up, by the walls; in the other practically the whole of it is thrown back, and sooner or later reaches our eyes.

If people understood this better, they would realize what good economy it is to have their rooms covered with some surface that is very light in color, and at the same time can be washed. It is good economy because far less light is needed to light such a room, the walls of which throw back nearly all the light in the room instead of sucking it up.

WHY DOES A BUMP COME INSTEAD OF A DENT WHEN WE KNOCK OUR HEADS?

It is quite possible to make a dent in the skull, or in a bone, just as in a table, but the blow would have to be hard, and would have to be made by something with a sharp edge, and even then the dent would not last long, but would soon be filled up, and much more than filled up, for a bump would be formed. The reasons why this bump is formed are very interesting.

When you have knocked your head, you have done a certain amount of damage at the place, and what happens

there is what happens at any part of the body that has been damaged. The same is true whether the damage is due to a blow, or to a cut, or to a sting, or to the presence of microbes.

Everything that makes the bump is due to the body's effort to repair the damage; and so we are to look on the bump as natural "doctoring," which is what it really is. The blood-vessels in the affected part enlarge, so that a quantity of blood goes there. Certain of the fluids of blood soak through the walls of the blood-vessels, while numbers of white blood-cells pass through the walls also, and the swelling is due to the extra amount of fluid and to this vast congregation of cells that assemble in the place.

They are all there for a purpose; they bring materials from which new things can be made to replace and repair anything that has been damaged or broken. If microbes are there, the fluids include substances which are poisonous to microbes, and the white cells eat the microbes up, and the part is made well again.

WHAT MAKES A HEADACHE?

A whole book could be written about headache, for it has so many causes. *A very common one is decayed teeth,* as any doctor will now tell you.

The nerve that supplies the forehead and the front part of the scalp is the same as the nerve that sends branches to the jaws and teeth; and when one part of it is disturbed, the other is likely to give us trouble too. So when any of us has constant headaches we must be sure to attend to any decayed teeth that we may have.

Another very common cause of headache is strain of the eyes in reading. This does not happen to those few and fortunate people whose eyes are of exactly the right shape and size, nor does it happen to short-sighted people; but it constantly happens to those whose eyes are what we call long-sighted. They can see clearly at long distances, but for sight at short distances, as in reading and writing, they need to strain the eye in order to see the letters clearly, and this strain almost always gives rise to headache. The remedy is to use glasses to assist the muscles inside the eye to do the excessive work imposed upon them. This will relieve the strain and the consequent headache.

ARE HEADACHE POWDERS GOOD THINGS?

Everyone should know that the answer to this is, No—a thousand times, No. There is no headache powder anywhere that does anything to remove the cause of any headache. Headache powders only dull the brain so that we cannot feel the pain, and so very often persuade us to give up attending to ourselves, as we should do if the pain were still there. The powder does nothing for the decayed teeth, or the strained eyes, or the overloaded stomach, that may be the real cause of the trouble.

These powders are all poisons, and people have often been killed by them. It is very wrong that men should be able to sell these things. People get into such a condition that they cannot do without them, and they gradually injure their brains and their minds, and do harm much greater than that which they seem to relieve in curing the headache.

WHAT MAKES A SICK-HEADACHE?

In the answer to the previous questions, we have read about three of the many causes of headache; but this question is about a quite special kind of headache that has nothing to do with the teeth or eyes, and makes us much more miserable than an ordinary headache does. The pain may not be so great, but we are more unhappy, because we feel bad *all over,* and not only in the head. When we feel bad *all over,* the reason is almost always to be found somewhere inside the trunk of the body, and, nine times out of ten, in the stomach or its neighborhood.

In other words, this is a kind of headache that suggests to the doctor, not teeth or eyes, but indigestion. People who never have indigestion never have these horrible sick-headaches. The best way to avoid them is to be careful and sensible about what we eat; and the best way to cure them is to believe that Nature is wise in making an appetite disappear for a little. If we stop eating, and so give the stomach time to recover, and if we take some simple salts, or something of the kind, to clear away what is poisoning the blood and the brain, we shall soon be well.

WHERE DOES THE WOOL GO WHEN WE GET HOLES IN OUR STOCKINGS?

This question really and rightly assumes the answer to another question: Does the wool go to nowhere? The answer to that question is No, for we

know that it is impossible for anything to go nowhere.

Now, we can find out what happens to the wool by asking how this hole in the stocking is made. Holes do not come in stockings as long as they lie in drawers unused. It is when and where a stocking is rubbed that the holes come. After a lot of walking that wears a hole in a stocking, we could certainly find traces of wool on the skin and inside the boot if we were to look with a microscope.

WHY IS BREAD CALLED "THE STAFF OF LIFE"?

This is a very old name for bread, and, unlike many such old names, it is a very good one. Spirits used long ago to be called the "water of life," or, in Latin *aqua vitæ*, but everyone knows now, or should know, that if they are to have any name of the kind, it should be *aqua mortis*, water of death. The old name, however, was hastily given to spirits by those who first discovered the way to distil alcohol, and who naturally wanted to make the most of their discovery.

The belief that bread is a very good food, which is what men mean when they call it "the staff of life," is very old indeed. It must doubtless date back to the remote ages when men first grew corn for the purpose of making bread, and our reading in the Old Testament about the famine in Egypt in the time of Joseph will give us some idea of the high honor in which grain was held a very long time ago.

WHY IS BREAD SUCH A VALUABLE FOOD?

It is only in the last few years that men have learned how to study all kinds of food and find out exactly how good they are, and in what way they are good, for the human body. This has been done, many times over and in many different ways, for thousands of foods and drugs, and certain very important facts have already been firmly established. We are still in much doubt as to the exact value of meat and of many other foods; but everyone who has any right to an opinion is agreed as to the value of bread. Milk is the staff of life in our earliest years, and nothing else can replace it. But, though no other one food is as all-important in later years as milk is at first, bread is superior to everything else in its food value, and its cheapness and its freedom from anything that injures the body. Therefore, it cannot be too cheap.

WHY HAVE SOME PEOPLE MORE BEAUTIFUL VOICES THAN OTHERS?

If anyone has something the matter with the little cords in his throat that make his voice, it will be harsh or husky. A drunkard has usually injured his vocal cords, and so his voice is usually husky. But if people's vocal cords are quite well they are very like each other; and the difference between beautiful voices and ordinary voices has *nothing at all to do* with the vocal cords. The vocal cords of the most beautiful singer, if we could hear the sound they make by themselves, away from the rest of the throat, would disappoint us very much. The sound made by the vocal cords is always harsh and ugly. The beautiful singer is one who, firstly, has his throat and nose and mouth of exactly such shapes that they change the sound made by his cords into a pleasant sound. Secondly, he is a person who has learned how to move the muscles of his throat and tongue and cheeks so as to make the sound as beautiful as possible. No one can make uglier sounds than a good singer, if he really wants to, for he is so clever in controlling these muscles that vary and modify sounds.

WHY DO SOME PEOPLE SPEAK MUSICALLY AND OTHERS HARSHLY?

It is thought that the chief difference between people who speak in a beautiful voice and people who speak in an ugly voice is a difference not in the vocal cords, or yet in the throat, nor even in skill in using the muscles used in speech or singing; but it is a difference *in the brain*. People who have delicate ears—which means people whose brains, in the part which hears, are beautifully and finely made—will produce the kind of sound their brain likes, at any rate as far as they can; and almost anyone can speak, or even sing a few soft notes, in beautiful tones, *if they try*. But if our brain is coarsely made, and does not know or care about the difference between beautiful tones and ugly ones, then we shall just make the sounds that carry farthest, or take the least trouble to make, however ugly they are.

THE NEXT BOOK OF WONDER IS ON PAGE 5809.

THE DESERTED VILLAGE

"THE Deserted Village," "She Stoops to Conquer," "The Traveler" and "The Vicar of Wakefield" are the best known works of Oliver Goldsmith, author, poet, and playwright. Born in Ireland in 1728, he went to Trinity College, Dublin, in his sixteenth year, but was too idle and pleasure-loving to shine as a scholar. After leaving college he wandered through Europe, earning his bread and lodging by playing "merry tunes" on his flute. At about the age of thirty he settled in London and began to write. As his fame grew he became acquainted with Johnson, Reynolds, Burke, and other great men of the time. Throughout his life he was an impractical and self-indulgent man, always getting into scrapes, yet so lovable withal that many of the chief men of his day were his devoted friends. Carlyle calls his novel, "The Vicar of Wakefield," "the best of all modern idylls."

CONTINUED FROM 5630

SWEET Auburn! loveliest village of the plain,
Where health and plenty cheered the labouring swain,
Where smiling spring its earliest visit paid,
And parting summer's lingering blooms delayed.—
Dear lovely bowers of innocence and ease,
Seats of my youth, when every sport could please—
How often have I loitered o'er thy green,
Where humble happiness endeared each scene;
How often have I paused on every charm—
The sheltered cot, the cultivated farm,
The never-failing brook, the busy mill,
The decent church that topped the neighbouring hill,
The hawthorn bush, with seats beneath the shade,
For talking age and whispering lovers made!
How often have I blest the coming day,
When toil remitting lent its turn to play,
And all the village train, from labour free,
Led up their sports beneath the spreading tree—
While many a pastime circled in the shade,
The young contending as the old surveyed;
And many a gambol frolicked o'er the ground,
And sleights of arts and feats of strength went round:
And still, as each repeated pleasure tired,
Succeeding sports the mirthful band inspired—
The dancing pair that simply sought renown
By holding out, to tire each other down;
The swain mistrustful of his smutted face,
While secret laughter tittered round the place:
The bashful virgin's sidelong looks of love,
The matron's glance that would those looks reprove:—
These were thy charms, sweet village! sports like these,
With sweet succession, taught e'en toil to please;
These round thy bowers their cheerful influence shed,
These were thy charm—but all these charms are fled.

Sweet smiling village, loveliest of the lawn,
Thy sports are fled, and all thy charms withdrawn;
Amidst thy bowers the tyrant's hand is seen,
And desolation saddens all thy green:
One only master grasps the whole domain,
And half a village stints thy smiling plain.
No more thy glassy brook reflects the day,
But choked with sedges works its weedy way;
Along thy glades, a solitary guest,
The hollow-sounding bittern guards its nest;
Amidst thy desert-walks the lapwing flies,
And tires their echoes with unvaried cries.
Sunk are thy bowers in shapeless ruin all,
And the long grass o'ertops the mouldering wall;
And, trembling, shrinking from the spoiler's hand,
Far, far away thy children leave the land.

Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay:
Princes and lords may flourish, or may fade—
A breath can make them, as a breath has made;
But a bold peasantry, their country's pride,
When once destroyed, can never be supplied.
A time there was, ere England's griefs began,
When every rood of ground maintained its man,
For him light labour spread her wholesome store,
Just gave what life required, but gave no more;
His best companions, innocence and health;
And his best riches, ignorance of wealth.

But times are altered; trade's unfeeling train
Usurp the land, and dispossess the swain:

Along the lawn, where scattered hamlets rose,
Unwieldy wealth and cumbrous pomp repose,
And every want to luxury allied,
And every pang that folly pays to pride,
Those gentle hours that plenty bade to bloom,
Those calm desires that asked but little room,
Those healthful sports that graced the peaceful scene,
Lived in each look, and brightened all the green,—
These, far departing, seek a kinder shore,
And rural mirth and manners are no more.

Sweet Auburn! parent of the blissful hour,
Thy glades forlorn confess the tyrant's power,
Here, as I take my solitary rounds,
Amidst thy tangling walks and ruined grounds,
And, many a year elapsed, return to view
Where, once the cottage stood, the hawthorn grew—
Remembrance wakes, with all her busy train,
Swells at my breast, and turn the past to pain.

In all my wanderings round this world of care,
In all my griefs—and God has given my share—
I still had hopes my latest hours to crown,
Amidst these humble bowers to lay me down;
To husband out life's taper at the close,
And keep the flame from wasting, by repose;
I still had hopes—for pride attends us still—
Amidst the swains to show my book-learned skill,
Around my fire an evening group to draw,
And tell of all I felt, and all I saw;
And, as a hare, whom hounds and horns pursue,
Pants to the place from whence at first she flew,
I still had hopes, my long vexations passed.
Here to return—and die at home at last.

Sweet was the sound, when oft at evening's close,
Up yonder hill the village murmur rose;
There, as I passed with careless steps and slow,
The mingling notes came softened from below;
The swain responsive as the milkmaid sung,
The sober herd that lowed to meet their young,
The noisy geese that gabbled o'er the pool,
The playful children just let loose from school,
The watch-dog's voice that bayed the whispering wind,
And the loud laugh that spoke the vacant mind—
These all in sweet confusion sought the shade
And filled each pause the nightingale had made,
But now the sounds of population fail,
No cheerful murmurs fluctuate in the gale,
No busy steps the grass-grown footway tread,
For all the blooming flush of life is fled—
All but yon widowed, solitary thing,
That feebly bends beside the plashy spring;
She, wretched matron—forced in age, for bread,
To strip the brook with mantling cresses spread,
To pick her wintry fagot from the thorn,
To seek her nightly shed, and weep till morn—
She only left of all the harmless train,
The sad historian of the pensive plain!

Near yonder copse, where once the garden smiled,
And still where many a garden-flower grows wild;
There, where a few torn shrubs the place disclose,
The village preacher's modest mansion rose.
A man he was to all the country dear,
And passing rich with forty pounds a year.
Remote from town he ran his godly race,
Nor e'er had changed, nor wished to change, his place;
Unpractised he to fawn, or seek for power
By doctrines fashioned to the varying hour,
Far other aims his heart had learned to prize—
More skilled to raise the wretched than to rise.
His house was known to all the vagrant train;
He chid their wanderings, but relieved their pain;
The long-remembered beggar was his guest,
Whose beard descending swept his aged breast;
The ruined spendthrift, now no longer proud,
Claimed kindred there, and had his claims allowed;
The broken soldier, kindly bade to stay,
Sat by his fire, and talked the night away;
Wept o'er his wounds, or, tales of sorrow done,
Shouldered his crutch, and showed how fields were won.
Pleased with his guests, the good man learned to glow,
And quite forgot their vices in their woes;
Careless their merits or their faults to scan;
His pity gave ere charity began.
Thus to relieve the wretched was his pride,
And even his failings leaned to virtue's side;
But, in his duty prompt at every call,
He watched and wept, he prayed and felt for all;
And, as a bird each fond endearment tries,
To tempt her new-fledged offspring to the skies,
He tried each art, reproved each dull delay,
Allured to brighter worlds, and led the way.
Beside the bed where parting life was laid,
And sorrow, guilt, and pain, by turns dismayed,
The reverend champion stood. At his control
Despair and anguish fled the struggling soul;
Comfort came down the trembling wretch to raise,
And his last faltering accents whispered praise.
At church, with meek and unaffected grace,
His looks adorned the venerable place;
Truth from his lips prevailed with double sway;
And fools, who came to scoff, remained to pray.
The service past, around the pious man,
With ready zeal, each honest rustic ran;
Even children followed with endearing wile,
And plucked his gown, to share the good man's smile.
His ready smile a parent's warmth expressed,
Their welfare pleased him, and their cares distressed;
To them his heart, his love, his griefs were given,
But all his serious thoughts had rest in heaven.

As some tall cliff that lifts its awful form,
Swells from the vale, and midway leaves the storm;
Though round its breast the rolling clouds are spread,
Eternal sunshine settles on its head.

Beside yon straggling fence that skirts the way,
With blossomed furze unprofitably gay,
There in his noisy mansion skilled to rule,
The village master taught his little school;
A man severe he was, and stern to view,
I knew him well, and every truant knew;
Well had the boding tremblers learned to trace
The day's disasters in his morning face;
Full well they laughed with counterfeited glee
At all his jokes, for many a joke had he;
Full well the busy whisper, circling round,
Conveyed the dismal tidings when he frowned—
Yet he was kind, or if severe in aught,
The love he bore to learning was in fault.
The village all declared how much he knew;
'Twas certain he could write, and cipher too;
Lands he could measure, terms and tides presage—
And e'en the story ran that he could gauge;
In arguing too, the parson owned his skill,
For e'en though vanquished, he could argue still,
While words of learned length and thundering sound
Amazed the gazing rustics ranged around—
And still they gazed, and still the wonder grew
That one small head could carry all he knew.
But passed is all his fame: the very spot,
Where many a time he triumphed, is forgot.

Near yonder thorn, that lifts its head on high,
Where once the sign-post caught the passing eye,
Low lies that house where nut-brown draughts inspired,
Where gray-beard mirth and smiling toil retired,
Where village statesmen talked with looks profound,
And news much older than their ale went round.
Imagination fondly stoops to trace
The parlour splendour of that festive place;
The whitewashed wall, the nicely sanded floor,
The varnished clock that ticked behind the door—
The chest contrived a double debt to pay,
A bed by night, a chest of drawers by day—
The pictures placed for ornament and use,
The twelve good rules, the royal game of goose—
The hearth, except when winter chilled the day,
With aspen boughs and flowers and fennel gay—
While broken teacups, wisely kept for show,
Ranged o'er the chimney, glistened in a row.

Vain transitory splendours! could not all
Reprieve the tottering mansion from its fall?
Obscure, it sinks; nor shall it more impart
An hour's importance to the poor man's heart.

TO A BUTTERFLY

This little poem was composed by William Wordsworth at Grasmere in England, on March 14, 1802, and it referred to the poet's childhood days spent in the town of Cockermouth with his beloved sister Dorothy, "Emmeline" being a fanciful name used by the poet instead of his sister's real name. It was true that Dorothy used to chase the butterflies with her brother, and it was because she told him later of her fear of brushing the dust off their wings that he wrote these verses.

STAY near me—do not take thy flight!
A little longer stay in sight!
Much converse do I find in thee,
Historian of my infancy!
Float near me; do not yet depart!
Dead times revive in thee:
Thou bring'st, gay creature as thou art,
A solemn image to my heart,
My father's family!

Oh, pleasant, pleasant were the days,
The time when, in our childish plays,
My sister Emmeline and I
Together chased the butterfly!
A very hunter did I rush
Upon the prey—with leaps and springs
I followed on from brake to bush,
But she, God love her, feared to brush
The dust from off its wings.

ST. JOHN THE BAPTIST

Arthur O'Shaughnessy was an Irishman who was born in London in 1844 and died in 1881. In this noble poem on Saint John the Baptist, the biblical references will not puzzle the young reader at all well versed in Bible stories. Elias, of course, is another form of Elijah, and the last lines refer to the prophet speaking with God in Mount Horeb.

I THINK he had not heard of the far towns,
Nor of the deeds of men, nor of kings' crowns;
Before the thought of God took hold of him,
As he was sitting, dreaming in the calm
Of one first noon, upon the desert's rim,
Beneath the tall, fair shadows of the palm,
All overcome with some strange inward balm.

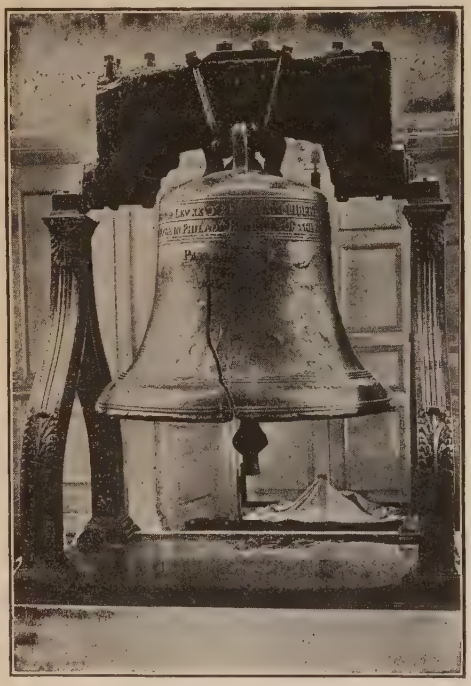
He numbered not the changes of the year,
The days, the nights, and he forgot all fear
Of death. Each day he thought there should have been
A shining ladder set for him to climb
Athwart some opening in the heavens, e'en
To God's eternity, and see, sublime,
His face whose shadow passing fills all time.

But he walked through the ancient wilderness.
Oh, there the prints of feet were numberless
And holy all about him! And quite plain
He saw each spot an angel, silvershod,
Had lit upon; where Jacob, too, had lain.
The place seemed fresh, and bright, and lately trod;
A long track showed where Enoch walked with God.

And often, while the sacred darkness trailed
Along the mountains smitten and unveiled
By rending lightnings, over all the noise
Of thunders and the earth that quaked and bowed
From its foundations, he could hear the voice
Of great Elias, prophesying loud
To Him whose face was covered by a cloud.

INDEPENDENCE BELL

IT is said that the Liberty Bell was brought over to Philadelphia in 1752 and was rung to celebrate the adoption of the Declaration of Independence on July 4, 1776. After that it was rung on important occasions until it became so badly cracked that it could never be used again. The Liberty Bell has become a beloved symbol of American patriotism and has made several trips to different parts of the United States. Placed carefully in a car especially built for it, and with a guard of honor, it made its last trip to the Panama-Pacific Exposition at San Francisco in 1915. At every town or city at which the train stopped, all the children from the schools were taken to see this treasured relic, which links the great nation of to-day with the thirteen feeble colonies of 1776. It now hangs in the hall of the old State House in Philadelphia, where visitors come to see it from all over the United States. On its side are inscribed the words, "Proclaim Liberty Throughout the Land to all the Inhabitants thereof."



THERE was tumult in the city,
In the quaint old Quaker town,
And the streets were rife with people
Pacing restless up and down,—
People gathering at corners,
Where they whispered each to each
And the sweat stood on their temples
With the earnestness of speech.

As the bleak Atlantic currents
Lash the wild Newfoundland shore,
So they beat against the State House,
So they surged against the door;
And the mingling of their voices
Made a harmony profound,
Till the quiet street of Chestnut
Was turbulent with sound.

"Will they do it?" "Dare they do it?"
"Who is speaking?" "What's the news?"
"What of Adams?" "What of Sherman?"
"Oh, God grant they won't refuse!"
"Make some way, there!" "Let me nearer!"
"I am stifling!" "Stifle, then!
When a nation's life's at hazard,
We've no time to think of men."

So they beat against the portal,
Man and woman, maid and child,
And the July sun in heaven
On the scene looked down and smiled;
The same sun that saw the Spartan
Shed his patriot blood in vain,
Now beheld the soul of freedom,
All unconquered, rise again.

See! See! The dense crowd quivers
Through all its lengthy line,
As the boy beside the portal
Looks forth to give the sign,
With his little hands uplifted
Breezes dallying with his hair,
Hark! with deep, clear intonation,
Breaks his young voice on the air.

Hushed the people's swelling murmur,
List the boy's exultant cry!
"Ring!" he shouts, "Ring, Grandpa!
Ring! Oh! ring for Liberty!"
Quickly at the given signal
The bell-man lifts his hand,
Forth he sends the good news, making
Iron music through the land.

How they shouted! What rejoicing!
How the old bell shook the air,
Till the clang of freedom ruffled
The calmly gliding Delaware!
How the bonfires and the torches
Lighted up the night's repose,
And from the flames, like fabled Phoenix,
Our glorious Liberty arose!

That old State House bell is silent,
Hushed is now its clamorous tongue,
But the spirit it awakened
Still is living, ever young,
And when we greet the smiling sunlight
On the Fourth of each July,
We will ne'er forget the bell-man
Who, betwixt the earth and sky,
Rang out, loudly, "Independence,"
Which, please God, shall never die!

PAUL REVERE'S RIDE

Among the "Tales of a Wayside Inn" by Longfellow is the story told by the Landlord concerning the ride that Paul Revere took to Lexington and Concord to warn the people of the approach of the English troops. We may see elsewhere in THE BOOK OF KNOWLEDGE a picture by the same Paul Revere.

LISTEN, my children, and you shall hear
Of the midnight ride of Paul Revere,
On the eighteenth of April, in Seventy-five;
Hardly a man is now alive
Who remembers that famous day and year.

He said to his friend, "If the British march
By land or sea from the town to-night,
Hang a lantern aloft in the belfry-arch
Of the North Church tower as a signal light,—
One, if by land, and two if by sea;
And I on the opposite shore will be
Ready to ride and spread the alarm
Through every Middlesex village and farm,
For the country-folk to be up and to arm."

Then he said "Good night!" and with muffled oar
Silently rowed to the Charlestown shore,
Just as the moon rose over the bay,
Where swinging wide at her moorings lay
The Somerset, British man-of-war;
A phantom-ship, with each mast and spar
Across the moon like a prison-bar,
And a huge black hulk, that was magnified
By its own reflection in the tide.

Meanwhile, his friend, through alley and street,
Wanders and watches with eager ears,
Till in the silence around he hears
The muster of men at the barrack-door,
The sound of arms, and the tramp of feet,
And the measured tread of the grenadiers,
Marching down to their boats on the shore.

Then he climbed to the tower of the church,
Up the wooden stairs, with stealthy tread,
To the belfry-chamber overhead,
And startled the pigeons from their perch
On the sombre rafters, that round him made
Masses and moving shapes of shade,—
Up the trembling ladder, steep and tall,
To the highest window in the wall,
Where he paused to listen and look down
A moment on the roofs of the town,
And the moonlight flowing over all.

Beneath, in the churchyard, lay the dead,
In their night-encampment on the hill,
Wrapped in silence so deep and still
That he could hear, like a sentinel's tread,
The watchful night-wind, as it went
Creeping along from tent to tent,
And seeming to whisper, "All is well!"
A moment only he feels the spell
Of the place and the hour, and the secret dread
Of the lonely belfry and the dead;
For suddenly all his thoughts are bent
On a shadowy something far away,
Where the river widens to meet the bay,—
A line of black that bends and floats
On the rising tide, like a bridge of boats.

Meanwhile, impatient to mount and ride,
Booted and spurred, with a heavy stride
On the opposite shore walked Paul Revere.
Now he patted his horse's side,
Now gazed at the landscape far and near,
Then, impetuous, stamped the earth,
And turned and tightened his saddle-girth;
But mostly he watched with eager search
The belfry-tower of the Old North Church,
As it rose above the graves on the hill,
Lonely and spectral and sombre and still.
And lo! as he looks, on the belfry's height
A glimmer, and then a gleam of light!
He springs to the saddle, the bridle he turns,
But lingers, and gazes, till full on his sight
A second lamp in the belfry burns!

A hurry of hoofs in a village street,
A shape in the moonlight, a bulk in the dark,
And beneath, from the pebbles, in passing, a spark
Struck out by a steed flying fearless and fleet;
That was all! And yet, through the gloom and the light
The fate of a nation was riding that night;
And the spark struck out by that steed in his flight
Kindled the land into flame with its heat.

He has left the village and mounted the steep,
And beneath him, tranquil and broad and deep,
Is the Mystic, meeting the ocean tides;
And under the alders, that skirt its edge,
Now soft on the sand, now loud on the ledge,
Is heard the tramp of his steed as he rides.

It was twelve by the village clock
When he crossed the bridge into Medford town.
He heard the crowing of the cock,
And the barking of the farmer's dog,
And felt the damp of the river fog,
That rises after the sun goes down.

It was one by the village clock,
When he galloped into Lexington.
He saw the gilded weathercock
Swim in the moonlight as he passed,
And the meeting-house windows, blank and bare,
Gaze at him with a spectral glare,
As if they already stood aghast
At the bloody work they would look upon.

It was two by the village clock,
When he came to the bridge in Concord town.
He heard the bleating of the flock,
And the twitter of birds among the trees,
And felt the breath of the morning breeze
Blowing over the meadows brown.
And one was safe and asleep in his bed
Who at the bridge would be first to fall,
Who that day would be lying dead,
Pierced by a British musket-ball.

You know the rest. In the books you have read
How the British Regulars fired and fled,—
How the farmers gave them ball for ball,
From behind each fence and farmyard wall,
Chasing the redcoats down the lane,
Then crossing the fields to emerge again
Under the trees at the turn of the road,
And only pausing to fire and load.

So through the night rode Paul Revere;
And so through the night went his cry of alarm
To every Middlesex village and farm,—
A cry of defiance and not of fear,
A voice in the darkness, a knock at the door,
And a word that shall echo for evermore!
For, borne on the night-wind of the Past,
Through all our history, to the last,
In the hour of darkness and peril and need,
The people will waken and listen to hear
The hurrying hoof-beats of that steed,
And the midnight message of Paul Revere.

THE NATURALIZED ALIEN

Every year thousands of immigrants come across the ocean, settle among us, and soon become naturalized and loyal citizens. This poem by Lurana Sheldon shows the patriotic spirit of one who has learned to love this country and the freedom and liberty for which its flag stands.

THE land I claim claims me!
It holds me sacredly its own, and I
For its best welfare will both fight and die
If such a sacrifice shall be
Part of the great necessity.

The land I claim has made
My chance for victory, for strong success.
In other climes my triumph would be less,
For here has freedom truly laid
Each open path of honest trade.

The land I claim has left
My hands unbound, my will at peace.
Rich are the blessings, precious the release,
From chains whose links were cleft
Ere hope my soul bereft.

The land I claim claims me,
And she shall find her foster-soldier true
To this her flag, the red, the white, the blue,
Though kith and kin shall cross the sea
To call me back to loyalty.

FLAG DAY*

Though this little poem was written for the children of the United States, it is quite as true of Canada. With the change of a word or two it could be recited by a Canadian child who loves his or her flag. This poem was written by Minna Irving.

THE flag— it stands for hearth and home,
For life and liberty,
Prosperity upon the land,
And safety on the sea.
From every fold, immortal souls
Of countless heroes call;
It represents the truest, best,
And bravest in us all.

The flag—the nation rises up
From coast to coast to-day,
Saluting reverentially
Its colors bright and gay.
Beneath its stars the slave is free,
The starving ones are fed,
The weary exile finds at last
A shelter and a bed.

The flag—from old Nantucket's light
To Yukon's furthest crag,
We'll live for it and die for it,
Our great and glorious flag.
We'll cherish it until the breath
Of life from us departs,
For every day, the year around,
It's Flag Day in our hearts.

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WHEN THE CALL IS SOUNDED

The thrill of martial music is felt in this poem by Lurana Sheldon, the author of many poems which have been published in magazines and newspapers. It tells how the soldiers "from hill and valley, from mountain and plain," hasten to rally around the flag when they hear the bugle call summoning them to duty.

THEY will come from the hill and the valley;
They will come from the mountain and plain;
From the deeps and the heights they will rally
At the sound of the bugle's refrain.
They will come in their youth and their beauty
With valorous daring and skill,
And all will be patriot duty,
And all will be patriot will.

Not once will the echo, repeating,
Ring emptily over the plain,
But, swelled with the voices of greeting,
Redouble the clarion strain.
From hearths that are shadowed with sorrow,
From homes that are happy and gay,
They will come at the summons to-morrow
To march to the heat of the fray.

The day when the war-cry is sounded
Not one will show vestige of fear,
But numbers in haste will be rounded
And all will be courage and cheer.
They will come from the mountain and valley,
A noble, invincible band,
To the Flag of the Free they will rally—
The Flag of their own Native Land!

THE FLAG

WHEN you see that flag of beauty,
Do you feel the call of duty?
Do you hear the bugle sounding in your heart?
When you see its colors blowing,
Does it set your spirit glowing
For your country, make you strong to do your part?
That Freedom may not perish
From the land that Freemen cherish,
Do your part!

THE HOUSE THAT JACK BUILT



THIS is the house
that Jack built.



THIS is the malt
that lay in the house
that Jack built



THIS is the rat that ate the malt
That lay in the house that Jack built.



THIS is the cat
that killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the dog
that worried the cat
That killed the rat
that ate the malt
That lay in the house that Jack built.



THIS is the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the maiden all forlorn
That milked the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the man all tattered and torn
That kissed the maiden all forlorn
That milked the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the priest all shaven and shorn
That married the man all tattered and torn
That kissed the maiden all forlorn
That milked the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the cock that crowed in the morn
That wakened the priest all shaven and shorn
That married the man all tattered and torn
That kissed the maiden all forlorn
That milked the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.

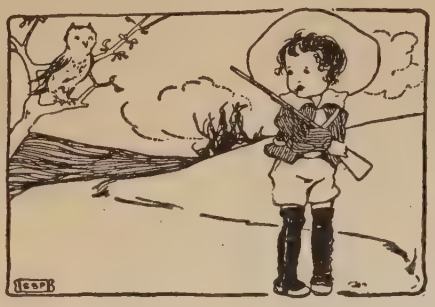
THIS is the farmer sowing the corn
That kept the cock that crowed in the morn
That wakened the priest all shaven and shorn
That married the man all tattered and torn
That kissed the maiden all forlorn



That milked the cow with the crumpled horn
That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.

LITTLE VERSES FOR VERY LITTLE PEOPLE

THERE was an owl lived in an oak:
Whiskey, whaskey, weedle!
And all the words he ever spoke
Were "Fiddle, faddle, feedle!"



A gunner chanced to come that road:
Whiskey, whaskey, weedle!
Says he, "I'll shoot you, silly bird!
So fiddle, faddle, feedle!"

ONE, I love; two, I love;
Three, I love, I say;
Four, I love with all my heart;
Five, I cast away;
Six, he loves; seven, she loves;
Eight, both love;
Nine, he comes; ten, he tarries;
Eleven, he courts; and twelve, he marries.

THERE was an old woman called
Nothing-at-all,
Who rejoiced in a dwelling exceedingly
small;
A man stretched his mouth to its utmost
extent,
And down at one gulp house and old
woman went.

BOW-WOW, says the dog;
Mew-mew, says the cat;
Grunt, grunt, goes the hog;
And squeak, goes the rat.

Chirp, chirp, says the sparrow;
Caw, caw, says the crow;
Quack, quack, says the duck;
And what cuckoos say, you know.

So, with sparrows and cuckoos,
With rats and with dogs,
With ducks and with crows,
With cats and with hogs,

A fine song I have made,
To please you, my dear;
And if it's well sung,
'Twill be charming to hear.

BOBBY SHAFT is gone to sea,
With silver buckles at his knee;
When he'll come home he'll marry me,
Pretty Bobby Shaft!

Bobby Shaft is fat and fair,
Combing down his yellow hair;
He's my love for evermore,
Pretty Bobby Shaft!

HO, my kitten, a kitten,
And ho, my kitten, my deary!
Such a sweet pet as this
Was neither far nor neary.
Here we go up, up, up,
Here we go down, down, down;
Here we go backwards and forwards,
And here we go round, round, round.

OH, who is so merry, so merry, heigh
ho!
As the light-hearted fairy, heigh ho,
heigh ho?
He dances and sings
To the sound of his wings,
With a hey, and a heigh, and a ho!
Oh, who is so merry, so merry, heigh ho!
As the light-hearted fairy, heigh ho,
heigh ho?
His nectar he sips
From a primrose's lips,
With a hey, and a heigh, and a ho!

THE dove says "Coo, coo, what shall
I do?
I can scarce maintain two."
"Pooh, pooh!" says the wren, "I have
got ten,
And keep them all like gentlemen."



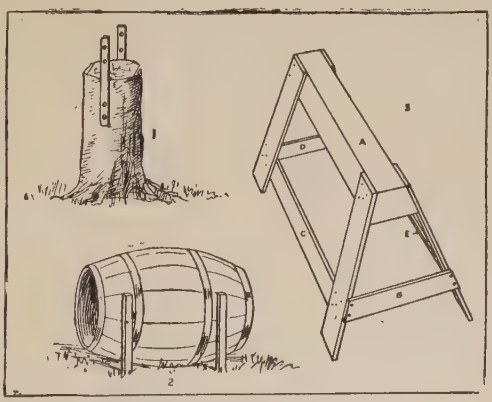
DAINTY, diddlety, my mammy's maid,
She stole oranges, I am afraid.
Some in her pocket, some in her sleeve,
She stole oranges, I do believe.



HOW TO MAKE A SEE-SAW

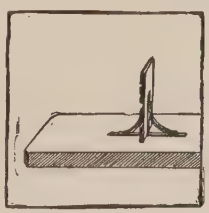
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A SEE-SAW is one of the simplest things to make, and a great deal of amusement can be obtained from it in the garden, not only by boys and girls, but by the grown-ups too. All we really need is a good stout plank of wood that will bear the weight of two people—one at each end—without bending, and some sort of a support upon which the plank may be placed, and which will act as a fulcrum, or pivot. For a see-saw is the simplest kind of lever, and, as we know, a lever has three parts. In the picture at the top of this page the trestle is the fulcrum, the lady is the weight, and the little girl is the power that has raised the lady. In a moment the lady will go down, when she will become the power, and the little girl will go up and be the weight.



DIFFERENT KINDS OF SUPPORTS

The plank we must obtain from some woodyard. It should be of sound wood, about 1½ inches thick, 12 inches wide, and 10 or 12 feet long. It may be painted, or not, as we like, but it certainly must be planed very smooth. If we want to have a handle at each end for holding when we are sitting upon the plank and it is going up and down, we can easily make one. We simply fasten an upright batten of wood to the plank, with an iron angle, such as may be bought at any hardware store, in the way shown in the bottom picture on this page. It should be put in the middle of the plank's width, and should be about 18 or 20 inches from the end. Now we come to the fulcrum, or support, and here we may select almost anything that is most handy. If there is a wide and sound stump of a tree that has been chopped down, standing about 2½ feet high, in some suitable position, it will serve our purpose admirably. To prevent the plank slipping off as it is worked backward and forward, we can smooth the sides of the stump and screw an iron angle at each side, as shown in picture 1. If no such stump is standing, but the trunk of a felled tree is lying on the ground, this, of course, does equally well; or even better, for the roundness of the trunk enables the see-saw to work better. A barrel placed on the ground and secured with stakes, as shown in picture 2, makes a very good fulcrum. A mound of earth also will provide all that is necessary. If none of these are available, we may make a trestle like that for the see-saw in the picture at the top of this page. It can be made as shown in picture 3. We need a stout beam (A), 2 or 2½ feet long, 4 inches deep, and 4 inches wide at the bottom. It should slant off toward the top, along its whole length, to 3 inches, and any carpenter will make the beam this shape for us if we cannot do it ourselves. Then we obtain some wood



SEE-SAW HANDLE

suitable for the legs and supports, about 3 inches wide and 1¼ or 1½ inches thick. We saw off four legs, say, 2¼ or 2½ feet high, and screw these on to the beam, using five screws, as shown by the dots in picture 3. We should use long screws that will firmly grip the two pieces of wood; but they should not be very thick, or they may split the wood.

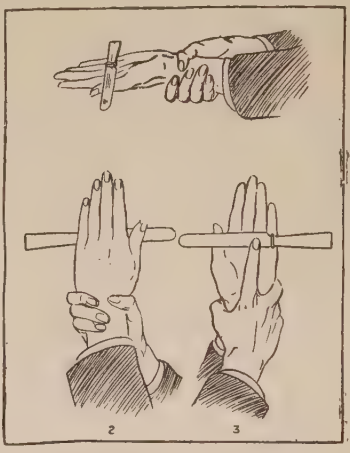
Then we saw off four pieces of wood, B, C, D, and E, and screw them to the legs for supports, as shown in the picture. All we now need to do is to place the trestle on the ground, drive in a little stake on each side to steady it—as shown in the picture at the top of the previous page—place the plank upon the trestle, and then see-saw as much and as often as we like.

If two children are using the see-saw, the plank should be placed upon the support with half the plank on each side; but if a grown-up person is to be at one end, and a boy or girl at the other, then there should be a greater length of plank on the side upon which the child sits.

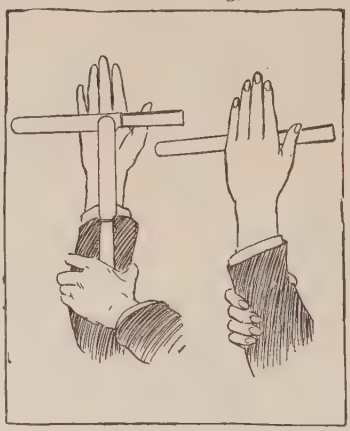
If the grown-up person at one end weighs 126 lbs. and is 3 feet from the middle of the swing, then the boy, if he weighs 42 lbs., to balance the grown-up person, must be 9 feet from the middle. If we know the weight of the two persons, we can always tell exactly at what distance from the middle they will balance each other, as the power at work depends on weight and on distance. Once get our see-saw and we can have great fun.

THE MYSTERY OF THE SUSPENDED KNIFE

AN amusing and simple trick that will greatly surprise all those who see it performed, unless they know the secret of how it is done, is that of the mysterious knife. We take an ordinary dinner-knife, and place it on the palm of the hand, as shown in picture 1. Then, talking a great deal about animal magnetism and the wonders of attraction, and explaining that it is necessary to keep a firm grip on our wrist in order to concentrate the magnetism, we cleverly turn over the hand with the knife, and, holding it up, show the knife apparently suspended without being held, as in picture 2. If the trick is carefully performed, the spectators will be greatly mystified. The explanation is given in picture 3. In turning over the hand with the knife, we quickly stretch out the forefinger of the right hand, and hold the knife up with this, while the thumb and other three fingers continue to grip the left wrist. If we continue to talk, to divert the attention of the spectators, and do not hold up the knife too long at one time, it is quite unlikely that anyone will notice that only three fingers of the right hand are visible. If, however, they do suspect that we are supporting the knife, then we can offer to do the trick again, removing the right hand away from the wrist and placing it so that the fingers of that hand could not possibly touch the knife. What the audience then see is shown in picture 4. This trick looks even more mysterious than the other, and if it is cleverly and carefully performed, there seems to be no explanation of how the knife is suspended upon the palm of the left hand, for the audience can see no apparent means of support. It is, however, done quite simply, and the method of supporting the knife is shown in picture 5. The thumb of the right hand holds the second knife close against the left wrist and palm, and this keeps the first knife in position. Of course, it is more difficult to perform this trick than the first one, as there is more chance of the spectators discovering the trick, owing to the difficulty in concealing the second knife. With a little practice, however, it may be done quite easily. We should, of course, have one or two knives on the table before us, and should pretend to take some trouble in selecting a good one. "This one," we can say, "is not magnetic enough." Then we take up another and try it, and so on. This deceives the audience and distracts their attention, and enables us to pick up the second knife to support the other. We shall naturally see to it that only blunt knives are used, and should there be any difficulty in obtaining suitable knives, we may use any other flat, long, and narrow objects that are not too heavy. Ordinary twelve-inch boxwood rules are very good objects with which to perform the trick, and if these are not available, ordinary flat sticks of wood are almost equally good. It is always wise to practise such a trick a good deal when we are by ourselves before trying to astonish our friends, as so much depends upon quickness and neatness in our movements, otherwise the method of supporting the knife will be noticed. Although, as already stated, we should not hold the knife up too long at one time, or our friends may discover the secret of the trick, yet we can show them the wonderful performance over and over again, taking the greatest care always to keep the second knife that supports the other well out of the sight of all the people who are watching.



HOW THE KNIFE IS SUSPENDED



ANOTHER METHOD OF SUPPORT

SOME CLEVER BALANCING FEATS

THERE are a number of interesting balancing feats which cause great astonishment to many who see them, and which seem very difficult indeed to perform and yet are really simple. To those, however, who know a little science, and understand the meaning of the phrase, *centre of gravity*, they do not seem at all wonderful, for the true explanation is perfectly clear.

Picture 1 on this page shows a balancing feat that may seem difficult, but is so easy that any boy or girl can do it. We take a piece of wood about ten or twelve inches long, and into it, near one end, we stick the blades of two knives, as shown. With a little adjustment, according to the size and weight of the knives and the length of the wood, we can balance the tip of the wood on the thin edge of a wine-glass or tumbler.

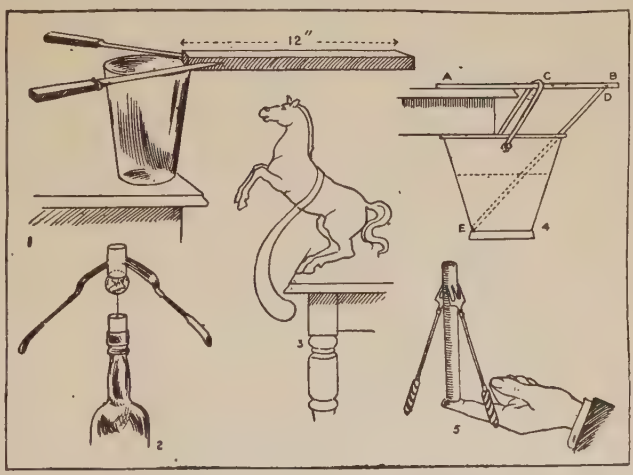
A somewhat similar experiment is that shown in picture 5, where a stick is balanced with perfect ease upon the finger. Some little distance from the top we insert two knives or two forks, and by means of these the stick is made to balance perfectly. Rather more difficult is the experiment which we see in picture 2. In this we are able to spin a quarter upon its edge on the point of a needle. First of all we take a bottle, such as a vinegar bottle, with a cork in it, and into this cork we push a needle, head downward, so that the point is sticking up. Now we take another cork, and in the end make a slit, into which we fix a quarter. Then into the sides of the cork we stick two ordinary table-forks, at an angle. We are now ready to try the experiment. We put the edge of the quarter upon the point of the needle, as shown in the picture, and if the forks have been properly arranged in the cork the quarter will balance easily. The coin, with the cork and forks, can then be spun round and round on the point.

Perhaps we may like to make a balancing toy which we can keep to show to our friends. Picture 3 shows such a toy. On stout cardboard we draw a prancing horse, with its head and legs very much forward. Across the back, and flowing out under the body in the direction of the tail, is a sash or rug, and at the end of this we fix a flat weight of some kind and cover it with paper. When we stand the horse upon its hind legs upon the edge of a table, as seen in the picture, it stands upright and firm.

Another interesting balancing feat, that appears very wonderful, can be performed with a pail of water, as shown in picture 4. Upon a table, a stick, A B, is laid, and a pail is hung upon this in the manner indicated. The handle, C, is at an angle to the pail, and the edge of the table should reach out just beyond the middle of the pail. To keep the pail in position a stick, D E, is placed in the pail, one end, E, being against the angle where the bottom of the pail joins its side. The stick must also touch the top edge of the pail, and its other end touches the stick A B at D, where a notch is cut to prevent it slipping. The pail is now perfectly balanced, and water may be poured into it until it is full.

The explanation of all these balancing feats lies in the secret of the centre of gravity. The centre of gravity of a body is the point at which the whole weight of the body may be said to be collected, and if a body be supported at its centre of gravity it will keep perfectly balanced.

In the first experiment, for instance, the wood and two knives are, to all intents and purposes, one body, as the weight of the knives is greater for their length than that of the wood, the centre of gravity of the whole is not midway between the end of the knives and the extreme end of the stick, but much nearer the knives. Hence the wood will balance perfectly, as shown. The experiment shown in picture 5 explains why it is very much easier for a man to carry two parcels weighing, say, fourteen pounds each, one in each hand, than it is for him to carry one parcel of twenty-eight pounds in one hand. The two parcels, one on each side, balance one another, and the man is able to walk upright. But when he carries the twenty-eight pounds in one hand all the weight is on that side, and it is necessary for the man to bend his body the other way, so that the centre of gravity of himself and the heavy parcel combined may be in a right position to keep him from falling.



EXPERIMENTS THAT SHOW THE WONDERS OF BALANCE

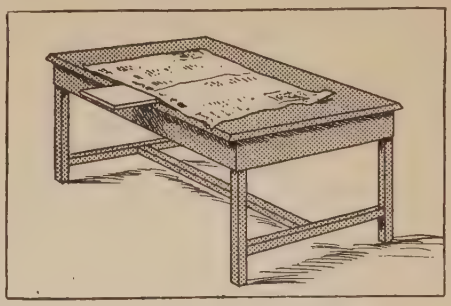
A boy was once carrying a heavy parcel in his right hand, when the string broke and the parcel fell to the ground. At once the boy toppled over to the left. He had been leaning to the left owing to the weight on his right, but as soon as the parcel fell, the centre of gravity, which had been correct when there was a heavy weight on one side, was in the wrong position, and the boy, being top-heavy, fell over. We can see how this happened if we remove one of the forks in the experiment shown in picture 5, when the stick will at once fall over on the other side.

HOW TO FEEL THE PRESSURE OF THE AIR

THERE is a very simple scientific experiment by which the pressure of the atmosphere may be felt, and which will, at the same time, cause a great deal of surprise and wonder to those who perform or see the experiment for the first time.

We take a board measuring about two feet in length by four or five inches in width, and, say, a quarter of an inch in thickness. This we place upon a table, with about six inches projecting beyond the table, and cover it with an opened newspaper, as shown in the picture on this page, taking care to smooth the paper down all over, so that it may lie as flat as possible on the table.

Now, clenching the hand, we bring it down with a sharp, hard blow upon the projecting wood. One who has never tried the experiment before naturally expects that the board will be knocked down off the table. But no matter how hard we may strike, the board will not go down.



THE BOARD THAT WILL NOT MOVE

The projecting end may be broken, but the board itself cannot be moved. And yet, if we *press* gently upon the end with one finger, the board can easily be pushed to the floor.

The explanation of the apparent mystery is to be found in the scientific fact of the pressure of the atmosphere. The air presses upon everything on the surface of the earth with a force equal to fifteen pounds on every square inch. But this pressure is unnoticed by us in ordinary circumstances, because it works equally in all directions.

When, however, the pressure of the air is removed from one side of a body, it is felt with great force on the other side. It is this removal of the air-pressure from one side that happens when we strike the projecting board.

The blow is given sharply, and the air has no time to rush in between the table and the newspaper. The result is that the pressure of fifteen pounds to the square inch is exerted in a downward direction only, upon the surface of the newspaper, and when we strike the end of the board this pressure is felt just as though the other end of the board were held down by heavy weights. It must, of course, be understood that the blow is to be short and sharp, the fist being removed from the board instantly. If the blow is a prolonged one, and the hand rests upon the board for more than a moment, it will go down, because that is the same as deliberately pressing upon the board. The air has no time to rush in under the board, and the pressure of the atmosphere then being the same both below and above the board, there is nothing to counteract our blow as is the case when we strike sharply and quickly, and the air-pressure is exerted on the top of the board only.

CARDS THAT TELL ANY NUMBER THOUGHT OF

IF we take six visiting cards, and copy on to them the six sets of figures that are printed below—one set on each card—we shall be able, with the six cards that we have made, to tell any number that a friend may have thought of.

We ask the friend to think of a number, and then we show our six cards, desiring that he will point out on which of these cards the number thought of appears. In a moment we tell him the number, much to his astonishment.

The explanation is very simple. We merely add up the figures that appear on the top right-hand corners of the cards upon which his number appears, and the total that results is the number thought of. Thus, suppose that our friend thought of the number 47. It is on the first, second, third, fourth, and sixth cards. The figures in the top right-hand corners of these are 1, 4, 8, 2, and 32, which, added together, make 47—the number thought of. We can guess people's ages in this way, and can get a great deal of fun from so simple a set of figure cards.

Some people know of figure cards by which a number can be guessed, but these are usually arranged so that the top *left*-hand figures have to be added to give the solution, whereas here the *right*-hand numbers must be added. If any of our friends have seen figure-guessing cards before, they will at once say that they can do the thought-reading as skilfully as ourselves. We let them try, and by adding up the *left*-hand figures they find that they are hopelessly wrong every time.

3	5	7	9	11	1
13	15	17	19	21	23
25	27	29	31	33	35
37	39	41	43	45	47
49	51	53	55	57	59

5	6	7	13	12	4
14	15	20	21	22	23
28	29	30	31	36	37
38	39	44	45	46	47
52	53	54	55	60	13

9	10	11	12	13	8
14	15	24	25	26	27
28	29	30	31	40	41
42	43	44	45	46	47
56	57	58	59	60	13

3	6	7	10	11	2
14	15	18	19	22	23
26	27	30	31	34	35
38	39	42	43	46	47
50	51	54	55	58	59

17	18	19	20	21	16
22	23	24	25	26	27
28	29	30	31	48	49
50	51	52	53	54	55
56	57	58	59	60	31

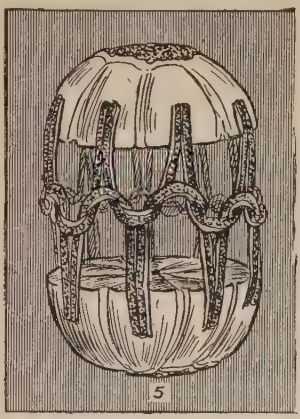
33	34	35	36	37	32
38	39	40	41	42	43
44	45	46	47	48	49
50	51	52	53	54	55
56	57	58	59	60	46

CURIOUS WAYS OF PEELING AN ORANGE

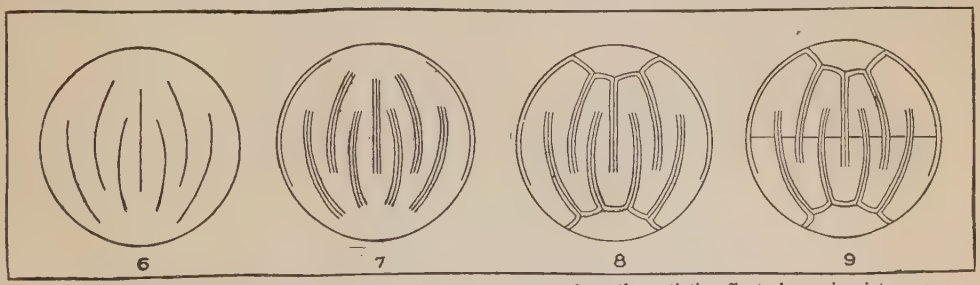
THERE are various ways of peeling an orange which give very artistic effects, and which can be done quite easily with a little practise. Perhaps the simplest of such methods of cutting the peel of an orange is that shown in picture 1. With a sharp knife we cut a number of slits from the top to about two-thirds the distance down the orange, and then gently and carefully pull away the peel all round from the white of the orange. We take the orange itself away, and open out the gores, or cuts, as shown in picture 2, and we have a water-lily. If a small light be put in the middle and be lighted, the effect is very pretty. A more elaborate way of cutting the peel of an orange gives the beautiful result shown in picture 5. First of all, we cut lines all round the orange as in picture 6; then on each side of these cuts, and about three-sixteenths of an inch away, we must cut other lines parallel to those already made, so that we now have the orange with a series of triple cuts as shown in picture 7. These cuts must now be joined up at the top and bottom of the orange in the manner shown in picture 8, and then across the middle, or equator, of the orange we cut the peel between the lines as is shown in picture 9. All is now ready, and with a small, blunt pen-knife we gently raise the peel everywhere from the body of the orange, taking care not to break any of the ribbons. Great patience is necessary, but at last we get the figure shown in picture 5; and if we are careful we can remove the orange from inside, piece by piece, or, if we do not wish to do this, we can let it remain and wither with the peel. Another artistic method of peeling an orange is to cut it as shown in picture 3, and then to pull back the peel carefully and release the orange so that we get two cups of the form which we see in picture 4. In cutting and peeling oranges in these fancy ways, one or two points must be remembered and carefully observed. First of all, in choosing our orange we should select a large one, not over-ripe and not under-ripe. It should have a smooth skin, not too thick, and without blemishes. Then for the cutting we must have a really sharp knife with a fine point, and in cutting we must not cut too deeply. The cuts should be clean, so that there are no jagged edges to the ribbons, and great care should be exercised so that we may not cut across places or lines that should not be cut. If we cut wrongly in making the design of picture 5, the whole scheme of cutting will be spoiled, and the peel will not fall into the proper loopings as they are shown in the picture. But with a little care and patience any clever boy or girl can become quite expert in fancy orange peeling, and will soon be able to invent new and artistic designs.



1, 2, the orange cut to make a water-lily; 3, 4, to make a rose-bowl.



5. An artistically peeled orange.



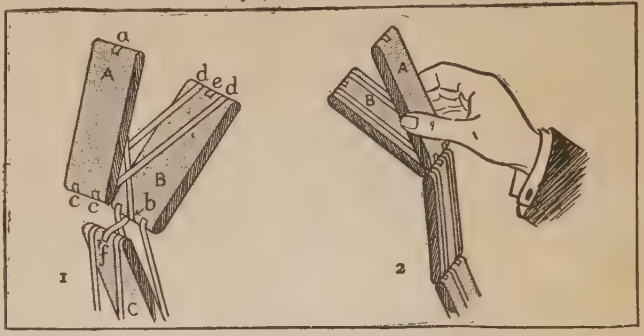
The different stages of cutting the peel of an orange to produce the artistic effect shown in picture 5.

A FILTER THAT A BOY CAN MAKE

IT is always well to filter our drinking-water, especially if we live in the country, and there is a very simple form of filter that any boy or girl can make with little trouble. We take an ordinary garden flower-pot eight or nine inches in diameter at the top, and after thoroughly washing it we stop the hole with a piece of sponge, which must not fit too tightly. Then we put in a layer of charcoal, about two inches deep, and above this a layer of clean sand, with a layer of clean, coarse gravel three inches thick on top. The filter is now quite ready for use. We fix it up over a vessel of some kind, and let the water which we want filtered run through the various layers in the flower-pot. Of course, from time to time the filter wants cleaning out thoroughly, but this is done quite easily, and we shall find that, simple as is this little apparatus, we have a thoroughly effective and serviceable filter.

THE MYSTERIOUS JACOB'S LADDER

A VERY old puzzle, which is easily made, is that known as the Jacob's ladder. It consists of an ingenious arrangement of little pieces of wood and tape, so fastened together that by holding the top piece of wood and alternately inverting it and bringing it back to its original position, another of the pieces of wood is apparently constantly falling from the top to the bottom of the ladder. To make one of these clever little toys, we first of all get some suitable wood from which to cut the pieces we need, and for this purpose nothing better could be obtained than an ordinary cigar-box. We decide how many steps our Jacob's ladder shall have, and although it may consist of any number, great or small, an average number is ten. A greater number becomes rather unmanageable.



METHOD OF FIXING THE TAPES & HOW TO WORK THE LADDER

The pieces of wood must all be of exactly the same size—for example, 3½ inches by 2 inches; and when they are cut out with a fretsaw they should be nicely smoothed, and the top and bottom angles rounded slightly by rubbing with sandpaper.

Ordinary white or pink or black tape about ⅜ or ½ an inch wide is used for joining the pieces of wood, and the method of fitting them to the wood is shown in picture 1. Each piece of wood has three tapes, and all the tapes should be of the same length—about 5 inches—so that the ends can just pass round with enough length to glue down on the wood as seen in the picture. There is a centre tape and side tapes for each piece of wood, and the arrangement is the same in each case, however many steps the Jacob's ladder may have. The centre tape *a* on the board A is fastened on the far side of the board B at *b*. The side tapes *c c* on A are fastened on the other side of B at *d d*, while the middle tape *e* on the board B passes on to the board C, and is fastened at *f*, and so on throughout the entire length of the ladder. When all the tapes have been glued, we hold the top little board A as in picture 2, and B seems to fall to the bottom; then we invert A, and again the board next to it seems to fall to the bottom. A is returned to its original position, and the board drops again, and so on without end. The whole thing is a clever optical illusion. This toy is said to have been invented in Japan many hundreds, if not thousands, of years ago, and large numbers of Jacob's ladders are sent from Japan every year for sale in the cities and towns of Europe and America.

A GOOD CONJURING TRICK WITH NUTS

THERE is an excellent conjuring trick that can be performed with very little preparation or apparatus, and if it is practised once or twice until skill is acquired, it will greatly mystify the spectators.

We hand round for the inspection of the audience an empty dessert plate and a clean pocket-handkerchief. These can be handled by anyone who likes to prove that they have no secret pockets or recesses. We now place the empty plate on the table, spread over it the pocket-handkerchief, and then, after making a few mysterious passes with the hand or a wand, we raise the handkerchief and shake out of it upon the plate a number of sweetmeats or nuts.



THE TRICK BAG

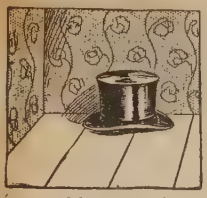
This is the explanation of the trick. We make a small triangular bag, as shown in the first picture, by sewing together two triangular pieces of linen or calico, and in the two hems on each side of the opening we sew straight pieces of watch-spring, taking care that in each case the spring goes the whole length of the hem. These springs, if they are flat, will close the opening of the bag, and keep it closed unless force is used to open it. A pin, bent to a hook, is put through the apex of the bag. Nuts or sweetmeats are now placed in the bag, and the spring closes the mouth, so that when the bag is suspended they will not fall out. Having prepared the bag in this way, we hang it by the hooked pin on the side of the table that is away from the spectators, this being done, of course, in advance, before they sit down, so that they know nothing about it.

After showing the empty plate to the audience, we place it on the table near the edge where the bag is suspended, and in spreading the handkerchief over it we see that part of it hangs over the edge of the table where the hooked pin is. Then in picking up the handkerchief we dexterously pick up with it the bag, the handkerchief falling all round so as to hide the bag. The rest of the trick is simple. We shake the handkerchief with a few vigorous jerks, and the impact of the nuts or sweets parts the springs, which are not very stiff, and allows the objects to fall out on the plate. The bag can then be skilfully dropped behind the table, which should, of course, have a thick cloth upon it, reaching down to the floor, so as to effectively hide the back. There are few conjuring tricks so easy to perform, and yet so surprising in their effects.

HINTS AND TRICKS FOR ODD MOMENTS

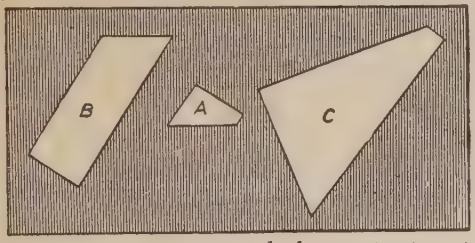
HOW HIGH IS THE HAT?

OUR eyes play us many tricks, and they often deceive us as to the size or height of anything. The apparent height of a hat, for instance, may be very much greater, or it may be less, than it really is. There is an interesting experiment by which we may prove this to ourselves. We should place some mark on a wall to show how high up we think the top of a tall silk hat will come when the hat is stood on the floor against the wall. It seems a very simple and easy thing to give a fairly accurate estimate, but we shall probably be hopelessly out. Let us mark the estimated height first, and then see how accurate we are, by placing the hat against the wall, as shown in the picture. It will spoil the amusement and stop the surprise if we say here whether the estimate is likely to be greater or less than the real height.



TO FORM A SQUARE

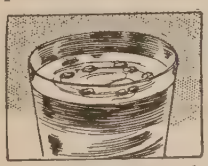
CUT out ten pieces of card—two of the size and shape of A, four of B, and four of C—and then arrange them in such a way that they will form a perfect square. When they are jumbled up it seems impossible that they could



be made into a square, and when we try to put them together it seems equally impossible; but with perseverance we shall probably be successful. If we are not, and the task is beyond us, we can turn to the solution which is given in the next Little Book of Entertainment.

A WHIRLPOOL IN A TUMBLER

IF we fill a tumbler with water and throw upon the surface some thin shavings of camphor, these will instantly begin to move about and give the appearance of a miniature whirlpool, the movement continuing for some time. But if we now dip into the water anything that is greasy—as, for instance, the end of a pencil that has been rubbed with oil—the particles of camphor will dart to the sides of the glass, and the motions will cease immediately.



A GOAT MADE FROM A PEAR

HERE is a picture of a goat made up from a pear with the aid of four matches, an almond, and some raisin-stalks. We stick the matches into the pear as shown, then we get a well-shaped almond from its shell to form the head, and into this we stick curved raisin-stalks for horns, two or three stalks for a beard, two short pieces of stalk for ears, and the whole is fixed to the end of the pear by means of a stalk or piece of match, thus forming the neck of the goat. A hole is cut on each side of the almond for the eyes. With a little ingenuity and practise we can make other animals from the different kinds of fruit.



CURIOUS WAY OF MEASURING A TREE

SOME of the natives of South America have a curious way of measuring the height of a tree or tower. They turn their backs to the tree, and walk away from it until they come to a spot where, keeping their backs to the tree, they can, by stooping down and looking between their legs, see the top of the tree. Then they make a mark on the ground, and the distance from this mark to the base of the tree is, roughly, the height of the tree. Any boy can thus tell within an inch or two the height of a tree or building.

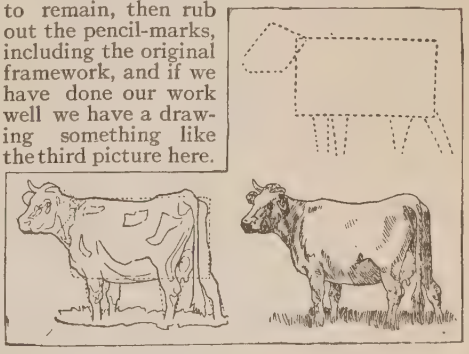


WRITING WITH INK ON WOOD

IF we have ever tried to write with pen and ink upon ordinary wood, we know how difficult it is. Directly we have written the words the ink begins to run, and if our pen has been well filled the words become, in a few moments, a mere blur, no matter how well they may have been written. To avoid this running of the ink, there is a very simple precaution which we can take, and that is to rub the wood with powdered resin, when we shall be able to write upon it with ink quite easily and well.

A SIMPLE WAY TO DRAW A COW

HERE is a simple way of drawing a cow. We begin by making a rough pencil outline of the shape of the cow, as in the first picture, getting the proportions correct. Then we begin to fill in the details of the animal, as in the second picture, and it will be found that the rough outline first drawn is a great help in making our sketch. When we have the cow penciled in completely, we ink over the lines that are to remain, then rub out the pencil-marks, including the original framework, and if we have done our work well we have a drawing something like the third picture here.



VERSES MADE WITH FIGURES AND LETTERS

WRITERS of verses have shown a great deal of ingenuity in using for their rhymes words that can be expressed by figures or by single letters, which, when pronounced, give the sound, either exactly or almost exactly, of the word represented. A great deal of amusement may be obtained on a wet evening, when we have to remain indoors, by gathering a party round the table with pencils and paper, and seeing who can, in a given time, make up the best rhymes in this way. The examples given here will show how the letters and figures are worked into the lines. The first little poem is a very good specimen of the use of single letters as a substitute for actual words.

The Chinaman praiseth his T's,
  The mandarin praiseth his Q;
The gardener praiseth his turnips and P's,
  But I praise U.

The mariner loveth the C's.
  The bagatelle-player his Q;
The husbandman loveth his cattle and B's,
  But I love U.

The foolish have need of the Y's,
  The actor needeth his Q;
The pilot hath need of two excellent I's,
  But I need U.

The hunter seeketh the J's,
  The shepherd seeketh his U;
The college boys seek their final B.A.,
  But I C Q.

Here is an example of verses in which double letters are used all through for the rhyming words. This is more difficult to arrange. The double Y, of course stands for 'Wise' and so on.

There is a farmer who is Y Y
  Enough to take his E E,
And study Nature with his I I,
  And think of what he C C.

He hears the chatter of the J J,
  As they each other T T,
And sees that when a tree D K K
  It makes a home for B B.

A yoke of oxen he will U U,
  With many whoas and G G,
And their mistakes he will X Q Q
  When ploughing for his P P.

He little buys, but much he sells,
  And therefore little O O;
And when he hoes his soil by spells,
  He also soils his hose.

This little poem has all the figures from one to ten, with the single exception of the figure 5, worked into it in a very clever way.

Astronomy is 1-derful,
  And interesting, 2
The ear 3 volves around the sun
  Which makes a year 4 you.

The moon is dead and calm,
  By law of phy-6 great;
It 7 where the stars alive
  Do nightly scintil-8.

If watchful Providence be-9
  With good in-10-tions fraught.
Did not keep up its grand design,
  We soon should come to o.

Astronomy is 1-derful,
  But it's 2 mighty 4
1 man 2 grasp, and that is why
  I'd better say no more.

Of course, in the third line of the second verse the "h" is omitted by writing "It" for "It's heaven."

Here is one of the nonsense rhymes called Limericks in which figures are very cleverly worked in to represent syllables.

There was an archbishop named T8,
Who dined with a friend at 8.8,
  But, sad to relate,
  I'm unable to state
What T8's t8-á-t8 8 at 8.8.

Another limerick in which the figure 8 is introduced in a very similar way is this.

They dined all alone at 8.8,
On oysters they dined and 8.8;
  And he asked his dear K8
  To tell him his f8
When they 8 t8-á-t8 at 8.8.

Here is another verse in which letters are used to take the place of a word.

A budding author, something new
Submitting, signed himself X Q;
The editor the paper read,
And begged he might be X Q Z.

Another little verse was headed "U C I D K," and, after puzzling over this title for some time, the editor to whom it had been sent read the verse, which was as follows:

Surely, good sir, you follow me?
It is as plain as A B C;
Repeat it in a treble clef,
For I am rather D E F.

The title was, of course "You see I decay." Perhaps one of the best poems in which letters are used for words is the following, which is entitled "A Maid of R K D."

A dainty maid of R K D
  Is F E in her bower;
Smart as U C A honey-B;
  And sweet as N E flower.

Does she S A herself 2 please,
  X Q Q the little miss,
She sings an L E G 2 T T,
  Or blows an M T kiss.

"B mine" I say, "U bonny J,
  B4 U R mine L (my knell);
When U R gay, my hopes D K,
  In T-sing U X L."

Without ado she takes the Q,
  Her I I B9 and B D;
"O, sir, I do not N V U,
  I C U R so need E."

"O F E, U I C R true,
  Y need I C Q less?
I'll never D V 8 from U,
  But end my cares with 'S' (caress)."

AMUSEMENT WITH STOPS AND COMMAS

THE little commas and periods, and other similar signs that we see scattered about this page, and the pages of all the books that we read, do not seem very important. Yet, without these, it would very often be quite impossible for us to know what a writer meant.

Some sentences and paragraphs, indeed, can be made to have two exactly opposite meanings, according to how the stops are put in, and a good deal of amusement can be got if a few friends sit round a table, each having before him a paper and pencil, and try to punctuate correctly some of these rather difficult sentences. The sentences and verses given on this page may be used for this purpose.

SENTENCES THAT NEED STOPS

Here is a very startling statement:

King Charles the First walked and talked half an hour after his head was cut off.

We might doubt the accuracy of this, but when we know that there should be a semicolon after *talked*, and a comma following the word *after*, then the meaning is quite plain:

King Charles the First walked and talked; half an hour after, his head was cut off.

Many of us know the little rhyme:

Every lady in this land
Has twenty nails upon each hand
Five and twenty on hands and feet
All this is true without deceit.

We wonder how it can be true, till it is properly punctuated in this way:

Every lady in this land
Has twenty nails; upon each hand
Five, and twenty on hands and feet.
All this is true without deceit.

Here is a sentence that looks like a mere jumble of words:

That that that is is that that is not is not that that that is not is not that that is is is not that so.

It should be punctuated in this way, and the words in italics should be emphasized:

That *that* that is, is *that* that is not, is not; that *that* that is not, is not *that* that is, is. Is not that so?

When a gentleman made the remark to his friend, "Time flies you cannot they pass too quickly," he was not talking about the passing of time, but about the timing of flies. A semicolon after *cannot* makes the sentence clear.

THE INSPECTOR AND THE MAYOR

A Prussian school-inspector called one day upon the burgomaster, or mayor, of a small town, and asked him to come on a tour of inspection of the schools in the district. The burgomaster was not anxious to go, and the inspector heard him mutter to himself: "What is this donkey here for again?" At the first school, the inspector said he would like to examine the children in punctuation. "Oh, bother that!" said the burgomaster, anxious to get on to the next school. "What do commas and such trifles matter?" But the inspector insisted, and, writing a sentence on the board, he asked a boy to read it, which the lad did as follows: "The burgomaster says the inspector is a donkey." Then, putting commas after the words *burgomaster* and *inspector*, he asked another boy to read the sentence, thus: "The burgomaster, says the inspector, is a donkey."

In this rhyme, to make sense, a semicolon should be placed after the first noun in every line except the last of each verse:

I saw a peacock with a fiery tail
I saw a blazing comet pouring down hail
I saw a cloud all wrapt with ivy round
I saw a lofty oak creeping on the ground
I saw a beetle swallowing up a whale
I saw a foaming sea brimful of ale
I saw a pewter cup sixteen feet deep
I saw a well full of men's tears that weep
I saw wet eyes in flames of living fire
I saw a house as high as the moon and higher
I saw the glorious sun at deep midnight
I saw the man who saw this wondrous sight.

I saw a pack of cards gnawing a bone
I saw a dog seated on Britain's throne
I saw King Edward shut up in a box
I saw an orange driving a fat ox
I saw a butcher not a fortnight old
I saw a great coat all of solid gold
I saw two buttons telling of their dreams
I saw my friends who wished I'd quit these themes.

Some years ago a London news agency received a cablegram from its correspondent in Australia which read as follows:

"Influenza extensively prevalent Wales Victoria numerous deaths Bishop Adelaide found dead sea-serpent sixty feet Coffin Bay."

This was published in the newspapers as three separate items of news to the effect that influenza was very prevalent in New South Wales and Victoria; that the Bishop of Adelaide had been found dead; and that a great sea-serpent, sixty feet in length, had been seen in Coffin Bay.

As a matter of fact the bishop was not dead, and it was he who was supposed to have found the remains of a dead sea-serpent lying on the beach at Coffin Bay sixty feet long.

STOPS THAT COST MONEY

Some years ago, the blunder of an American clerk, in putting a comma in the place of a hyphen, cost the United States nearly $2,500,000. A duty was to be put on certain goods going into the country, and among those to be allowed in free, were "all foreign fruit-plants," meaning young fruit-trees for planting. In copying this part of the Bill for Congress, the clerk made it read: "all foreign fruit, plants," and so on. The result was that for a year, until Congress could set the mistake right, all kinds of fruit were allowed into the United States free of duty.

A wealthy Frenchman left a large sum of money to his two nephews. Each expected *two* hundred thousand francs, but the executors said they were entitled to only *one* hundred thousand. The nephews pointed to a sentence in the will which read like this: "A chacun deux cent mille francs," meaning, "To each two hundred thousand francs"; but the executors pointed to a small apostrophe between the *d* and the *eux* of deux, making the sentence read: "A chacun d'eux cent mille francs," which means, "To each of them a hundred thousand francs." The nephews, however, got two hundred thousand francs each, the court deciding that the mark was a smudge, and not an apostrophe.

CONTINUED ON PAGE 5917.

BIRDS THAT LIVE INSIDE THE EARTH



THE KINGFISHER AND ITS HOME, SHOWING THE LONG BURROW IN THE RIVER-BANK



A SAND-MARTIN'S HOME AS IT APPEARS WHEN THE CLIFF IS CUT AWAY



Two peeps into a sparrowhawk's nest, showing the eggs and the young birds hatched from them.

THE HOMES OF THE BIRDS

THE CLEVEREST BUILDERS IN THE WORLD

CONTINUED FROM 5666



NOTHING pleases a business man more than to be able to put on his sign-board the announcement, "Established 100 years." It shows that his business must have been well conducted, and that the firm is a respectable one, or it would not have lasted so long. Well, there is a little colony of blue-tits, or tomtits, on a tree near Stockton-on-Tees, in England, which, if they had printed announcements, would be able to put on their sign, "Established over a century." For a hundred years this family of blue-tits has nested, generation after generation, upon that very tree, until its members ought to be included among the aristocratic families.

Such a period must represent from fifteen to twenty or more generations of blue-tits, a very long record indeed. The same number of generations in our own families would carry us back some six hundred years, and there is not a single person in North America who can say that his family has been in the same home for that length of time. The long tenancy of these little blue-tits reminds us that, where the conditions are favorable, where the people are kind and do not interfere, where the food supply is liberal, the birds go on building and rearing their young.

The fact that the birds live in the same kinds of nests for so long might, at first sight, seem to contradict the idea that all Nature is progressing, that all members of the animal family make their conditions of life fit the conditions in which they have to live.

But where altered circumstances demand new methods, the birds are never lacking in cleverness, never unable to adapt themselves to the new conditions. When birds prosper in the old way, we may know that there is no cause for them to change their methods. They have passed the experimental stage. Thousands of years have gone to the making of the commonest of ordinary bird-nest that we see. It has taken all that time for each species of bird gradually to master the secret of building.

The bird's nest, in its highest form, is the most perfect cradle ever made, so naturally we think of it being, as a rule, soft and downy, warm and snug. Of course, it is not so always. The birds which frequent the seashore and the rivers content themselves, very often, with a rough hollow, either in the ground or in a cleft of the rocks, or upon a ledge of some dizzy cliff. Birds of prey, too, are often rough and ready in their methods. The eagle's nest is a clumsy structure of sticks.

The heron likes to have her nest high and dry in some lofty tree-top,

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and lines it with roots and twigs and soft grass. Not many years ago a nest was blown down from a heronry in Nottinghamshire, in England, and an observer, on picking it up, was startled to find that it was made up almost entirely of wire, such as is used by some reaping machines to bind sheaves. The finder of the nest got a telescope, and carefully examined the other nests in the heronry, and found that others had been built in the same way from materials which the birds had gathered.

How the birds hide themselves

The coot or mud hen makes her home among the reeds by the water side. So cleverly does this bird build her nest with reeds like those which surround it, and withered leaves, that it is possible to pass it by many times without finding it.

The moor hen, a European bird which is closely related to the coot, has been known to build a nest of much the same kind as the herons in Nottinghamshire. Usually, however, they build, as our coots do, with sedge, reeds and dead leaves, and make the nest a masterpiece of safety. The nest is placed by the side of a river, stream, or lake, among reeds, in the roots of a tree overhanging the water, or even among the branches of the tree which stretch out low across the water.

The writer of this story sat one day in a boat and saw a nesting moor-hen hide by deliberately sinking herself in the water, so that only the red bony plate of her forehead was visible, looking like a tiny crimson leaf floating on the stream, only six feet from the boat. We rowed away gently, pretending not to have seen through her marvelously clever deception.

Two birds that went to a wedding

We all know and love the goldfinch, but not all of us know that he often delays his wedding until the thistles have ripened. The nest of the goldfinch is a beautiful little cup made of the softest grass and finest moss, and the thistle down provides for its fairy silken lining.

The nest of the chaffinch, a European relative of the goldfinch, is built of mosses and pieces of wool, lined with horsehair and feathers. But one pair of chaffinches went to a wedding, after the other guests had gone home, and gathering up the confetti, built that, piece by piece, into their own little dwelling. Still more curious was the fancy of a pair of spotted flycatchers, which had used a great quantity of wax matches, bound together with pieces of silk and cotton. They had not scorned to pick up a couple of cigarette ends, and work these into the sides of the nest. The presence of so many old matches in the composition of the nest suggests that the birds must have deliberately sought them out after the first find.

All these birds show a spirit of progress. They prove that when, from choice or need, fresh material, unlike any ever used by their species before, has to be considered, they can build with the new stuff as well as with the natural products with which, during age upon age, their ancestors have been accustomed to work.

Inside a blackbird's nest

The English blackbirds build in our garden bushes and trees, in ivy, and in hedges, nests which are so common that the excellence of their make escapes notice. The outside of a blackbird's nest, though only made of coarse grass and other rough material, is admirably woven, but the beautifully arched interior of hardened mud, with its lining of fine grass, is really a splendid piece of work. It seems quite tiny when we look inside, but in it from four to six gaping, gawky youngsters live and grow into their first suit of feathers. The old lady who lived in a shoe could never have had a blackbird for schoolmistress, or she would not have found her children too many for the shoe in which she grumblingly lived. The thrush, which floods the air with such wonderful melody morning and evening, and whenever a welcome shower comes to refresh the earth, is another skilful builder which turns clay into a nest-interior as sound as the inside of a cocoanut-shell.

We all have our favorite birds, but there are half a dozen which most of us would agree to place at the head of our list. For many of us the cardinal bird and the nightingale would surely come first. There is such majesty in the melody of this bird that somehow we cannot but regard the nightingale as royal in all that affects it. It ought to live in a sort of bird's palace, we fancy. But fact and fancy do not here agree. The cardinal



A COOT GOING TO ITS NEST ALONG A PATH IT HAS MADE IN THE WATER

bird lines its nest with soft grass, but it is built of twigs and grape vine bark, mixed with leaves and coarse grass. Our great men and women are not always born in the mansions of the wealthy, and therefore we need not be disappointed that our finest singer is somewhat humbly cradled.

The mocking-bird that floods the air with music all day, and sometimes far into the night, is as much a favorite in parts of our own country as the nightingale is in Europe. It chooses bushes and low trees for its dwelling place, and builds a stout nest of bark and roots and stalks of grass, with a soft lining of feathers and hair.



A REED WARBLER'S NEST

We all agree, again, as to the charm of the skylark; its inspiring song, heard high in the heavens over our heads, and its blameless life, make it a universal favorite. But here, too, we have a surprise in regard to the nest. This high-soaring bird seeks the lowest level for the cradle of its little ones, making a nest of grass on the ground, with only a tuft of turf or a clod of earth for protection.

The favorite in the British Isles is the robin, with his friendliness for man, his brilliant eyes, his handsome breast, and, above all, the sweet trilling song of his which cheers and gladdens us when most other birds are moping. He stays around the dwellings of man all the year—a lov-



A GREAT CRESTED GREBE ON ITS NEST, BUILT ON THE WATER

WONDERFUL HOMES OF THE WEAVER BIRDS



A weaver-bird's nest.



Villages of sociable weavers.



Home of the bower-bird.



A great colony of weaver-birds' nests hanging over a river in East Africa.



A nest at the end of a leaf.



Weavers' nests hanging from a branch.

THE BIRD CARPENTERS AND THEIR HOMES



A woodpecker's home in an old bridge.



A laughing jackass at home in a tree-trunk.

Photo on left by Cherry Kearton, others in these pages by Oxley Grabham, C. G. Lane, W. Bickerton and Charles Reid.



Rook's nest on a weathercock



Magpie's nest on a chimney-stack



Stork's nest on a chimney

able little fellow, the greatest admirer that man has. He is the only bird that will fly out of a tree or hedge to come and meet us. Pretend to do a little work on the lawn or in the borders, and down comes Master Redbreast, to learn what you are doing, and, more likely, to see if your labors are bringing to light food for himself. His nest is neat, trim and round. It is built of leaves, dry grass and mosses cleverly woven together.

WHERE THE ENGLISH ROBINS BUILD THEIR HOMES

It would puzzle us to say where the robin redbreast will not build. A little girl placed in a greenhouse a cage which had once housed a dormouse, and in the tiniest part of the cage a pair of robins built a magnificent nest, and reared five children. The little girl visited the robins every day throughout the sitting period, and the baby robins daily, until they were old enough to fly away into the garden.

We often read of the nesting-places of robins, and here are a few: A jam-pot in a shed of a kitchen garden; the kitchen mantelpiece of a house; a pipe in the organ of a church; behind the clock in a public library; near the furnace of a blacksmith's forge; in the basket carried on a bicycle; in the collar of a coat hanging in a shed.

Luckiest of all was a gentleman, who had a family of robins in his drawing-room. In the centre of the room was a palm in a tub, draped with muslin. The two birds flew through the open window, took up their quarters in the tub, helped themselves to moss from other pots of plants in the room, and made their nest, not in the least afraid of the people constantly in and out of the room.

JENNY WREN'S WONDERFUL HOUSE

Next to the robin, little Jenny Wren is perhaps our most trustful friend among the birds. It loves to build near us, though it is not so boldly friendly as the robin. The wren that we know best is the house wren, which builds its feather-lined nest anywhere about the house. There are many different families of wrens in this country, however. Some of them live in marshes where they build globe-shaped nests, with an entrance at the side. These beautiful little nests are lined with soft satin-like down stolen from the marsh plants, and for safety are fastened to the reeds among which they are built.

The European wren makes a wonderful nest, roofed in with a fine dome, and having the entrance at the side. The shape of the nest makes it the more curious that the wren should choose some of the places in which we find it at home. Wrens have been known to build in potting-sheds over the heads of gardeners hard at work, in the sleeve of a coat left for a day in an outhouse, and beneath the covering of a scarecrow set up to frighten off birds less friendly to man's interests.

THE UNTIDY HOME OF THE ENGLISH SPARROW

We all know the rough, untidy looking nest of the English sparrow, now so common in America. We find

them everywhere; on the top of an electric light pole, in a corner of the veranda, in the doorway of a New York apartment house. This busy, impertinent, quarrelsome little bird is afraid of nothing, and loves to build near the habitation of man. We do not love him, but we do love the field sparrow and the song sparrow. These birds sing a sweet song, and the song sparrow especially has a beautiful note. These birds make their nests on the ground, among the tall coarse grasses, to which the song sparrow fastens hers securely. The chipping sparrow, however, builds a beautiful, hair-lined nest in the shrubbery, in which to lay its spotted eggs.

The starling has, like the sparrow, been introduced in this country. It is not a friendly bird, like some of the others. It takes up its quarters in English chimneys, beneath potting-sheds, anywhere, in fact, where it can creep or dive into a nest hidden from observation. It is an untidy nest at best that it makes, so it is best hidden. An equally close friend is the barn swallow or house martin, which makes a home as clever as a bee's, of mud and straw, a saucer-shaped structure properly ventilated yet so fashioned that neither wind nor rain can enter.



Redstart's nest in a heap of bricks



Flycatcher's nest in a gatepost



Great tit's home in a nesting-box

THE FRIENDLY BIRDS FOR WHOM WE PROVIDE HOUSES

The friendly little chickadee or titmouse makes her nest in the trunk of an old tree. Her nest must be soft and warm, and to make it she gathers up feathers dropped by other birds, scraps of wool, bits of fur, or soft moss. If we prepare a box for her she will gladly take possession of it, and build right under our windows.

So will the bluebird, which comes with its early song to tell us that winter has gone. This bird as a rule builds a grassy nest in the decayed branch of a tree; but we do not tolerate decayed trees in our gardens or orchards, and so if we want the bluebird near us, we must provide it with a house.

These birds are examples of the intimate relations between man and his feathered friends. They came here before man; they have seen their old haunts gradually given over to houses and gardens. But they have adapted themselves to circumstances, and are prospering by taking advantage of the shelter which man's home provides for them.

But much more wonderful than the nests we have been describing are the hanging nests of the orioles and vireos. The Baltimore oriole weaves a hanging basket from the end of the branch in a high apple tree in the orchard, or perhaps an elm tree by the roadside. The vireos build their nests in the crotch between the forks of a small branch and there they hang, like a basket from a tripod.

THE SWINGING CRADLE OF THE TAILOR-BIRD

But even these nests become ordinary when contrasted with the swinging cradle made by the tailor-bird. This bird, with only its beak for needle, sews two or three leaves together in the form of a cup, and in this places its nest of wool, hair, and fine grass. It

uses thread, which may be either silk, snatched from some caterpillar's cocoons, or pieces of wool or strong vegetable fibres.

The birds of Europe and North America which tunnel and build houses—the swallows and martins—are wonderful, but there is a more famous mason than these—the oven-bird of South America. This bird collects horsehair and fibre, and with these binds together the walls of the mud house which it builds. This mud house is wonderfully designed. It is built on a firm foundation of hardened mud; it has stout walls, and is covered in with a dome—a most difficult piece of work for a bird working with soft mud without scaffolding. Inside, the home is divided by a stout wall into two compartments, one of which is the nursery, and the other the living room.

THE HUSBAND WHO LOCKS UP HIS WIFE

Our carpenter-mason birds would probably own the hornbills as the head of their profession. A pair of these birds make their nest in the trunk of a tree, and the female, when about to lay her eggs, enters the hole and does not come away until the eggs are hatched. There is no way out, for her lord calmly fastens her in by plastering up the hole through which she has entered, leaving only a narrow slit through which she can thrust out her beak to be fed by him. The male has a hard time in feeding her and the whole family which is presently hatched.

Birds build pretty well everywhere, with all manner of material. The kingfisher is content to have evil-smelling fish-bones in the hole in the bank in which it lays its eggs; the hoopoe has a nest which smells vilely, apparently as a means of protection. A bare ledge of rock for a sea-bird, a hole in the sand for the ostrich, a mound of decaying vegetation which acts as a natural incubator for the eggs of the brush-turkey; nests of leaves, nests of spiders' webs, nests of dainty lichens; nests shaped like cups, like bottles, like hammocks, like sugar-loaves; nests made from a sort of glue from the birds' mouths—there is no end to the variety of nest-making, from the simplest to the most complex.

The kingbird or bee-killer weaves a beautiful nest of weeds and stalks and fibrous rootlets, and lines it with soft moss and silky down from plants.

The smaller the bird, the more brilliant its workmanship, as a builder. Some of the humming-birds have homes which would charm an artist—nests of silk stolen from webs, and blended with daintily tinted mosses. One bird, the baya of India, actually uses glow-worms to adorn its home. The nest is shaped like one of those wicker-covered bottles in which salad oil is sold, and hangs from a branch of a tree.

THE LOVELY HOME OF THE BOWER-BIRD

We do not know whether it is a love of beauty which makes the baya thus decorate its home, but we have no doubt about the love of attractive surroundings shown by the bower-bird of Australasia. This bird makes a nest, but, in addition, builds a hall of beauty, consisting of tall grasses, whose heads meet overhead to form an archway. The hall is decorated with bright shells, and any other decorative article that the bird can carry off.

It is the smaller birds, whose tiny nestlings require great warmth until they gain strength and feathers, that make the most charming nests. Larger birds take less care in building. The eagle makes a rough nest of sticks, generally on a ledge of rock or in a tall tree on some rocky place from which she can survey the country with far-seeing eyes.

Ducks make their nests on the ground, of grass and leaves, lined with feathers. The eider duck, which lives in the cold regions of the north, in Iceland, Norway, Greenland, and Newfoundland, builds her nest on a rock ledge, and not only lines it with down which she has plucked from her own breast, but makes a blanket of the down to keep the eggs or the young birds warm when she is absent from the nest. This down is much used to line warm garments and bed coverings, and as the hunters have found that if the down is taken, the mother bird will line it again, the nest is robbed again and again until the poor bird presents a sad appearance and can spare no more. When that time comes, she is allowed to hatch her eggs in peace.

It would require a very big book to contain the whole story of birds' nests, but we have already seen enough to realize how clever bird builders are: to them the beak is saw, pickaxe, needle, trowel, and, above all, hands.

THE NEXT NATURE STORY IS ON PAGE 5801.

FOUR SPLENDID PLACES TO LIVE IN



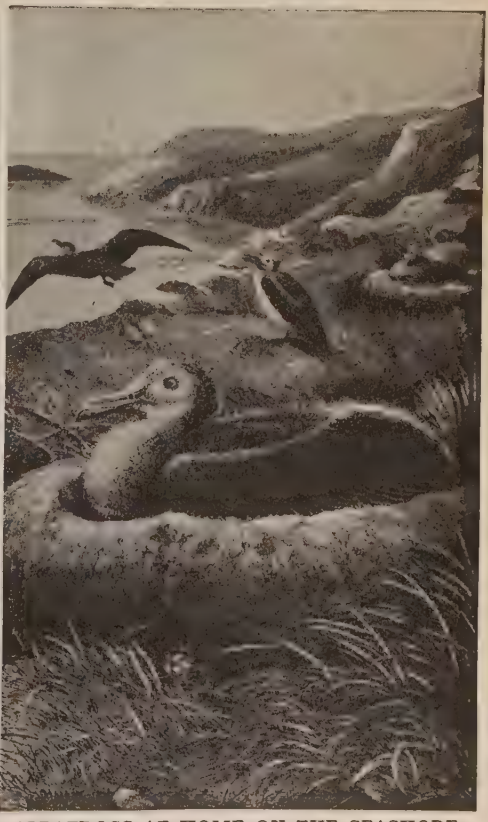
BRAZILIAN BIRD'S NEST FIXED TO TREE



REED-SPARROW'S NEST BUILT ON REEDS



OSPREY'S NEST WITH OTHERS BELOW



ALBATROSS AT HOME ON THE SEASHORE

AMERICA'S MOST VALUABLE PLANT



The maize, or Indian corn, or simply corn, is the most valuable crop raised in America. The earliest settlers found the Indians growing small fields of this crop, which they prepared in several different ways. White men soon learned to raise it, and now the United States produces about 3,000,000,000 bushels a year, or three to four times as much as the wheat crop. It makes good food for mankind and for animals, and its stalks are often eaten by animals. The stalks have been cut off close to the ground, and put into shocks. Later they will be taken to the barns. The ears are sometimes taken off before the stalks are cut. When the English use the word corn, they mean wheat, as they do not use much maize.

WHAT THIS STORY TELLS US

WHO has not, at some time or other, felt a thrill of dread upon hearing the clanging of a fire alarm? At any rate there are few to whom it does not bring a quickening of the pulse. The fear of fire is an old one, so deep rooted in the past that small children feel it by instinct, even though they may never have seen a house ablaze. All animals, except those which have associated with man for a long time, seem to have this fear also. You have read of hunters keeping wild beasts away from them by building a fire, or even making a circle of fire around them. Yet fire seems to have a fascination for some small creatures, and they sometimes run or fly into it.

WHEN THE FIRE ALARM RINGS

CONTINUED FROM 5706

FIRE cooks our food, keeps us warm in winter and it makes the steam which turns the wheels of our great industries. Nature has offered us no more useful servant than this fiery child of hers. But let the master only turn his back one moment and the slave leaps up in rebellion, hungry to devour and to destroy. Who has not felt a thrill of dread at the sound of the alarm?

While man lived in caves or tents, the danger was not so great. It was when he began to live in wooden houses and began grouping them together in towns and cities that the enemy began to be more dangerous to his possessions. All through history we find accounts of conflagrations that wiped out great cities. For when once the enemy had gained a foothold the people were helpless; all they could do was to gather together as much of their valuables as they could carry and flee to the open country for safety, resigning everything else to destruction.

THE ROMANS ORGANIZE A FIRE DEPARTMENT

It was the Romans who first attempted to offer resistance to these terrible raids. Possibly their experience in fighting their many human enemies suggested it to them; they were the masters, in their time, of the science of military warfare. Probably it occurred to them that the same methods could be employed successfully against the two kinds of enemies. At any rate Rome was the first city to organize a regular fire department, a standing army of fire fighters, which at one time numbered seven thousand.

Could we have a moving picture of a great fire in Rome, two thousand years ago, it would probably present to us a scene not very different from those we sometimes witness to-day in our own modern cities. The houses in the poorer and more populous quarters of Rome were usually built entirely of wood. Each family kept a fire burning on an open altar, in honor of the domestic gods, and so it was no wonder that fires frequently broke out.

The householder would rush out into the street, shouting. But there would be no alarm boxes to which he could turn. Instead there were men stationed along the streets, at short distances apart, known as "nocturnes." From one nocturne to another the alarm would be shouted along the line until it reached the nearest "castra," or fire house, where the fire companies covering that district would be quartered. Then all the human alarm boxes within hearing would rush to the scene of the fire and become

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policemen. Just as the police do at our fires, they would drive back the gathering crowds and establish strict fire lines.

Not many minutes would pass; then, above the excited murmuring of the crowds would rise the distant sounds of shouts and the quick tramp of many feet.

The nocturnes would rapidly clear an opening through the crowds and through the passage would charge a centurion, heading a company of firemen in metal helmets and leather jackets and trousers. Some would be bearing "siphones," wooden hand-pumps that worked like syringes; others would be armed with axes, hammers, saws and iron bars, while still other groups bore short ladders, so made that their ends fitted and could be clamped together, forming a means of ascent to the tops of the highest buildings.

After these foremost squads would follow the main mass of the firemen, the "aquarii," numbering hundreds, each carrying a light earthenware vase. The aquarii would immediately form into chains to the nearest cistern, supplied from the great aqueducts leading into the city, and presently the jars would begin emptying a continuous stream of water in the hand-pumps.

THE FIRE CHIEF FINALLY ARRIVES

Suddenly a chariot would dash through the passageway, bearing the "prefectus vigilum," the fire chief, who would assume command. Surgeons, too, would be in attendance, to care for those who might be injured or overcome by the smoke. There were three attached to each fire house. The pillow bearers, each four carrying among them a huge, leather pillow, each pillow at least four feet square and stuffed with feathers, were on hand. Should anybody appear in the upper windows of the burning building, the pillow bearers would immediately drop their pillows below the windows, upon which the imprisoned inmates of the building might leap. There are expert fire fighters to-day, who say that nothing has ever been invented that serves its purpose better than the life-saving pillow of the old Roman fire department.

Last to arrive would be the "questionarius," the most feared and respected of all the Roman fire officials. As his title might indicate, even to those who do not know Latin, his business was to ask questions, but to many his questions were anything but comfortable. How did the fire start? Was it accident? For the Roman laws demanded that responsibility must be fixed for every fire. It was the business of the questionarius to fix the responsibility. He established a court of inquiry, even before the flames had been subdued. He could compel testimony from everybody. It is only recently that modern cities in this country have taken example of old Rome and appointed officials whose duties correspond to those of the questionarius; he is known as the fire marshal.

SOME GREAT FIRES OF WHICH WE KNOW

When the Northern barbarians destroyed Rome a great many of her institutions were lost to the world. During all the dark Middle Ages men thought more of war and destruction than of saving lives and property from the flames. Great fires were thought to show that God was angry. Berlin was destroyed in 1405; Moscow, Lisbon, Venice, Vienna and Copenhagen suffered enormous and disastrous fires. Constantinople was entirely or partly wiped out a dozen times. London was again and again laid waste, notably in the years 798, 1087, 1132, 1212 and in 1666, the last being the "Great Fire," which burned for four days and destroyed 13,000 houses and public buildings covering 436 acres. Samuel Pepys in his famous Diary shows how helpless the people were. In the hope of checking the onward sweep of the flames houses were blown down with gunpowder across those sections toward which the wind was blowing the flames, that they might have nothing to feed upon.

The great fire of London seems to have waked the people to the need of something at least approaching a fire department. Immediately afterward officials were appointed who must make it their business to devise some means to check future fires. The hand-pump was brought into use again. Volunteer fire companies, too, were organized, just as they are to-day in our villages and small towns.

FIRES HAVE ALWAYS BEEN DESTRUCTIVE IN AMERICA

In the American colonies the problem of checking fires was even more serious than in the mother country, for here, because of the vast forests so close at hand,

the houses were built almost entirely of wood. One of the first fire companies to be organized in this country was founded in Philadelphia, in 1736. Benjamin Franklin was one of the four chiefs. Each member was expected to furnish, at his own expense, six leather buckets and two stout linen bags. The buckets, of course, were intended for throwing water on the flames; the bags were used as receptacles for whatever valuables might be saved from the burning buildings. In New York similar fire brigades were organized and it became quite the fashion for the young men of the city to join them.

EARLY FIRE FIGHTERS IN NEW YORK

The apparatus of these early fire brigades was so simple that it seems a wonder to us now that they could accomplish anything at all against even a single house afire. Everybody has seen the old prints depicting fire scenes of that period; the eight or ten men working the old hand-pump; one or two men squirting a stream of water on the flames from a hose not much thicker than that used in a garden; and the two chains of firemen formed between the pump and the nearest source of water supply, passing the buckets to and fro.

The invention of the steam engine brought about a big change. With steam-driven machinery big pumps could be employed, capable of throwing powerful streams of water against burning buildings. The first steam fire pump was used in England in 1829. Its first appearance was ridiculed and the name "steam squirt" was applied to it. Even so was the first steamship laughed at. Yet the "steam squirt" was the first of the modern apparatus used to-day by our fire companies, so complicated that whole books are written on how to work them.

STEAM ALSO INCREASES THE DANGER FROM FIRES

Steam has also increased the danger from fires. It has brought railway locomotives, showering sparks on shingled roofs, factories and warehouses, and cheap lumber which encouraged more than ever the building of wooden houses. The invention of matches, one of the most common origins of fire, soon followed, and also the use of petroleum for lighting. Meanwhile, smoking was becoming more common.

In Europe these changes did not increase the danger to the same extent as on this continent, for there the houses were largely built of stone and brick, because of the scarcity of timber. On this side the risks multiplied tenfold. The white and yellow pine, which was the principal material used in the building of American houses, was especially quick to burn. We had no laws about building.

Men said that the city had no right to tell a free-born citizen how he should build his home. And if John Smith & Co. chose to erect a wooden warehouse in which to store cotton or cases of petroleum, whose business was it but their own? If they were willing, for the sake of saving extra expense, to run the risk of fire, from which they would suffer most, who had the right to interfere? It is only of late years that we are beginning to realize, as they did long ago in Europe, that our personal liberties must not endanger the welfare of our neighbors.

GREAT FIRES WHICH HAVE OCCURRED IN THE UNITED STATES AND CANADA

From early times this continent has been the scene of big fires. Quebec suffered in 1815, 1845 and 1866. New York had serious fires in 1835 and in 1845, and in 1856. St. John (New Brunswick) was seriously damaged in 1837 and again in 1877; Pittsburgh was almost wiped out in 1845; Montreal had terrible fires in 1850 and 1852. The greatest fires of modern times have been the Chicago fire of 1871, the Boston fire of 1872, and the San Francisco fire of 1906. Charleston, Philadelphia, Savannah, Portland, Baltimore, each has a fire history. Where a European city has suffered disaster once or twice a century, American cities suffered three or four times.

With the same energy that had been employed in building, the people set about organizing means of protection against the danger. Need calls forth invention. The pressing need of fire-fighting apparatus caused the improvement of European inventions and the development of new machines. Another fire danger peculiar to this continent was the tall buildings that were being erected in the cities. This called forth the invention of the water-tower, which would be almost unnecessary in most European cities, where houses are seldom more than three stories high.

THE BEST FIRE DEPARTMENT IN THE WORLD

No wonder, then, that New York, with its skyscrapers, should have the biggest and most expensive fire department in the world. While buildings were limited to three or four, or even five stories, it was comparatively easy to deal with fire. When they began shooting fifteen, twenty and even forty stories into the air, it was another question. At first there was some talk of passing laws against the erection of such high buildings, but finally the engineers found a solution.

They got the idea of building pump houses in which could be installed gigantic steam pumps, so powerful that they could throw streams of water from the nozzles of hoses with almost the same force that a shell is fired from the mouth of a cannon. These pumps would be connected with the entire water piping system throughout the section of the city in which the skyscrapers were situated.

THE HIGH PRESSURE SYSTEM A SUCCESS

When the first test of the high pressure system was made, each pump station, five in number, made a delivery of 18,000 gallons of water a minute. Some of the individual pumps discharged as much as 3,800 gallons a minute. So powerful is a stream of water from a high pressure hose that it can make a brick wall crumble as though struck by an explosive shell. By raising the stream at an angle of eighty degrees it could easily reach the top of the highest apartment house in the city, or it could wash the dome of St. Paul's Cathedral in London.

HOW FIREMEN ARE CHOSEN FOR A GREAT DEPARTMENT

Firemen are chosen very carefully. First, the applicant for the position of common fireman must pass a very strict physical examination. His body must be strong and as nearly perfect as possible. After he has been passed by the doctor he must undergo the test for muscular strength. The candidate must hang suspended from the rung of a horizontal ladder by his hands, then pull himself up till his chin is above the rung; he must perform this feat fourteen times. Next a dynamometer is used to test the strength of the leg and back muscles and the joints of the knees. Finally there are various jumping feats to perform. Then he may be put on probation.

HOW FIREMEN ARE TRAINED IN A FIRE COLLEGE

If he is appointed he must first attend the college training school for probationers; like the soldier he must undergo a period of drill before he is sent out on the firing line. Here he is trained in the use of scaling ladders on a building a hundred feet high.

At the school the recruit is assigned to one of the drill squads and gradually broken in. He is taught to handle, raise and balance the ladders before he is allowed to use them. As the ladders weigh from twenty to sixty-five pounds, and range from fourteen to twenty feet in length, it can be seen that it takes experience to handle them. After the novice has mastered this he is made to climb to the first window, then to the second and, as his nervousness gradually leaves him, he mounts to the top.

Next the young fireman is taught how to build a "chain" of ladders hanging from the windows, up to the top. A man is stationed at each window. In this drill when the first man reaches the first window he fastens himself to his ladder by means of a large steel snap, attached to a strong canvas belt about his waist. Then he reaches down and pulls up another ladder, passed to him by the man below. At the top of each ladder is a long hook which just fits over the sill of a window. The first man raises the second ladder, and hooks it into the window above him, after which he climbs it, swinging like a monkey on the bough of a tree. And so the chain is built, each man coming up from below carrying one ladder for the chain. This exercise tests the nerves of the recruits, for they must undergo more serious dangers than this in discharge of their duties.

There is, indeed, need for iron nerve, for it is no human enemy that this fire army of New York must fight. The dangers to which firemen are exposed may not seem so picturesque as those which soldiers must undergo on the firing line, but, considering the smaller numbers engaged, the killed and wounded are quite as many. Only too often does a company return to the fire-house after a fire with one or more of its members missing. If the missing have not been carried to the hospital, they are dead, for the battle has been with an enemy that never takes prisoners.

WHAT FIRES ARE THE MOST DANGEROUS?

It is not always the fire that goes roaring through the roof of a building, lighting up the streets for a mile around, that presents the most danger. It is in the dull, smoky cellar fires that the fireman is most often overcome by smoke or gas. Then there is the awful "back draft," which every fireman soon learns to dread. Dashing up the stairway of a burning building, dragging the hose after them, the men come to a closed doorway. With axes they smash in the door. The smoldering fire within is exposed to view—and to the inrush of fresh air. For a moment there is an awful pause; then, as the oxygen strikes the fire the whole room explodes into a roaring flame. Out through the open doorway leap the fiery tongues, as though flashed from the mouth of a cannon. The experienced fireman instinctively falls flat, his face in his hands, ducking the blow. But many a man has been killed or horribly burned by back draft. At one fire, in New York City, some years ago, this kind of an explosion blew out the whole front of a building and severely injured the greater part of a whole fire company.

The falling wall is another common danger. Sometimes a brick wall will buckle in the middle and crumple, dropping like a curtain. The tumbling bricks are then easily dodged. But quite often the whole wall will fall straight out, reaching across the street and remain almost solid until it strikes the ground. This is the kind that kills or cripples whole companies.

Broken glass and molten lead are other perils met with at almost every fire. All through the department are found men bearing scars from wounds inflicted by glass splinters. And again they will enter large buildings not yet in full flame, encounter thick smoke and lose the way out. In such a case the experienced fireman immediately drops down beside his hose and, by following it, reaches the entrance.

THE NAVAL FIRE FIGHTERS

We have likened the five thousand men of the New York Fire Department to an army, but there is a section of it which should rather be compared to the navy. In New York, as in all cities on the water, there are certain sections which cannot be easily protected by the fire fighters on land, or at least, they can only attack fires there from one side. That is the shipping district. Docks reach out a fifth of a mile into the river or the bay, and on some of them are big warehouses filled with goods. Great ships lie beside them. On catching fire a ship may have its mooring lines burned through and then drift out of the reach of the streams from the fire hose. What adds to the danger of water-front fires is the fact that a fresh breeze is often blowing in from the water, ready to fan the flames inward. And a fire can be fought most effectively from the windward side.

To protect its long line of shipping, New York maintains a fleet of fire boats, really floating fire engines. At first glance one of these fire boats might well be taken for a torpedo boat, for the rows of brass-headed hose connections along the side of the deckhouse and the formidable-looking stand-pipes, or "monitor nozzles," as they are called, mounted fore and aft, give the appearance of naval armament.

THE POWERFUL FIRE BOATS OF NEW YORK

Each of these marine fire fighters is moored at a dock, beside a house erected by the Fire Department especially for her crew. This building is fitted up very much like any fire-house; sleeping quarters upstairs, sliding-poles by which the men can descend quickly to the ground floor, and a full set of telegraphic instruments by which the company may be informed of all the alarms that are sounded throughout the city. The boat itself lies with steam up at all times, ready to speed away on business, whether it be to a burning ship or lighter in midstream or to a burning coal bunker or dock at the other end of the city.

These boats are built of steel throughout and the deckhouse and wheelhouse is made of cement; there must be no woodwork about them that could ignite, for sometimes they are obliged to approach very close to a fire and deliver their streams at close quarters.

One of these fire boats, the New Yorker, can throw 12,000 gallons of water a minute at a blazing dock. The water, of course, is pumped up from over the side, up into an air chamber, which equalizes the pressure, then into a twelve-inch pipe which runs all around the boat, just below the deck, from which there are

forty-two outlets for hose connections, the biggest being six inches in diameter. Some of these lead to mounted nozzles, resembling machine guns, two of which are on top of the wheelhouse. From one of the latter a stream of water can be thrown over three hundred feet.

With all her power going the New Yorker can bombard a burning ship or warehouse with a veritable cascade, which only the biggest blazes can withstand for long. One blow from her monitor nozzle stream can make a hole in a brick wall.

Almost laughable is the fact that each of these boats, in spite of its being built especially for going into the very midst of the flames, must carry a row of fire buckets in its wheelhouse. Such is the regulation applying to all boats plying New York Harbor. Since laws must be applied to all alike, no exception can be made in favor of the fire boats.

A terrible water-front fire which once raged

Many have been the terrible sea battles with fire through which the New York fire fleet has rendered splendid service. Perhaps the most brilliant service it has rendered was its battle with the flames during the disaster that occurred in 1900. A fire started on one of the piers on the New Jersey side of the river, alongside of which the German passenger ship Saale was moored. In less than fifteen minutes the flames, fed by stores of cotton, turpentine and oil, swept from pier to pier. A strong breeze was blowing at the time. Before anybody could realize the danger, a quarter of a mile of docks and ships were ablaze.

The Saale and four other big German passenger ships were crowded with visitors. Before the crowds aboard could realize what was happening they were in the midst of roaring flames, which swept over them.

Whether they were cast loose by their crews or whether their mooring lines were burned through, the four big steamers, each blazing like a torch, drifted out into the river, crowded with people. Hundreds jumped into the water and of them some were rescued by tugboats and other craft, but most of them were forced down below into the holds. The portholes were too small to permit of their escape, and most of them perished. Altogether over four hundred people, mostly women and children, were burned to death.

How the fire boats saved the city of New York

But it was the fire fleet which saved these drifting conflagrations from setting ablaze the whole length of the shipping district on the New York side. One of the burning steamers, the Bremen, drifted across the river and set fire to a wharf, then to a lighter. One after the other the fire boats quenched these blazes. Finally they were able to give their whole attention to the four great steamers blazing in the river, pouring whole broadsides of water into them. Had it not been for their service there can be no doubt that one of the biggest fires in the history of any seaport would have swept the New Jersey and New York shores of the Hudson River.

Whole books might be devoted to the exciting encounters of the American fire departments with the enemy. The heroic fight of the firemen with the great fire that followed the earthquake in San Francisco, in 1906, is quite as thrilling as the story of any war. Another stirring event was the great Baltimore fire, in 1904, though fortunately here no lives were lost. On this occasion fire companies from Washington, Philadelphia and New York responded to the call for help and were hurried down on special trains. Here the flames had opposed to them, forces from four big cities as well as smaller help sent from small towns and cities.

Why such fire departments are necessary

It may seem that there is reason to boast of the fire departments, and, indeed, one cannot help being proud of the brilliant fights that the firemen have made. But if we think a minute we shall see that there is very little to be proud of. Why is it that in North America fire destroys four times as much property as in England? The yearly loss amounts to over three hundred million dollars; about three dollars for each man, woman and child of the population. The average for European cities is much less than a dollar for each person.

The answer is that in Europe they apply the old proverb that an ounce of prevention is worth a pound of cure. First of all, European cities have passed very strict regulations in the building of their houses, especially in limiting their sizes. There the people recognize the

EARLIER DAYS IN FIRE FIGHTING



Steam fire engines supplanted the old hand engines just as motor engines are supplanting steam. Here is shown one of the old hand engines, which was drawn by the firemen themselves, generally volunteers. The water was pumped by raising and lowering the bars at the side, which we here see lifted out of the way. The men who are holding the rope are the old volunteers, some of whom are now quite old men.



Several years ago, the New York Fire Department showed in a parade the different kinds of fire fighting apparatus which had been used in New York from early times. Here a part of the parade is shown about to start. The signs describe the apparatus and tell when it was used, or else give advice on fire prevention. A modern fire engine can throw more water than a dozen of the earlier engines, and throw it higher.

right of the city to dictate to its citizens of what material they shall build houses or factories. We, too, have begun to learn this lesson.

WHY THEY HAVE FEWER FIRES IN EUROPE

Another reason why the cities of Europe suffer less is because they follow the example of ancient Rome. The office of "questionarius" plays an important part. Probably most of our fires are caused by carelessness. The Europeans will not tolerate this as an excuse. They regard carelessness which endangers the lives and property of the city as a crime and punish it accordingly. One of the fire chiefs of New York gives an illustration in an incident which occurred while he was on a visit to a European city.

A blaze broke out in a small hotel at which he was stopping. The fire department responded to the alarm, put out the blaze, which did little damage, then carefully cleaned up the mess they had made. Next the fire marshal summoned the guest in whose room the fire had occurred. He was able to prove that it had happened through no fault of his. A coal had dropped out from a stove and ignited the floor. Next the landlady was sent for. She stated that she had just bought the house and that the stove stood as it did when she took possession. Then the previous owner was directed to appear before the fire marshal. He admitted that he had neglected to comply with the laws demanding that the floors be protected by metal sheeting. Thereupon he was heavily fined.

We, too, are adopting this method of prevention. Many of our cities now have appointed fire marshals, whose business it is to "ask questions." We are indeed learning that prevention, rather than heroic fire-fighting, is the solution of our fire problem. "An ounce of prevention is worth a pound of cure."

HOW FIRES MAY BE PREVENTED

There are many ways by which the loss from fire can be prevented, some of them easy, and some more difficult. One way is to build houses which will not burn so easily. Wood has been scarce for a long time in Europe and most houses there are built of brick or stone. In America wood has been so much cheaper than either of the other materials, that most houses in the country or in small towns and cities have been built from the product of the forests.

Another reason is the fact that our cities and towns have grown so rapidly that we have been too impatient to wait for substantial houses to be built. Wooden houses can be built much more quickly than brick or stone buildings. Then, too, a man often builds a wooden building expecting to tear it down when he becomes more prosperous. Now, a wooden building burns quickly and may set the buildings near by on fire also, while a fire in a brick building may be confined to the one house, and the walls may be saved.

Another cause of many fires is bad workmanship. The mason who is building a chimney does not always take the trouble to be sure that the chimney is tight. Then some day when there is a hot fire in the furnace, stove or fire-place, a spark goes through the crack and the house burns. Sometimes men who put in electric wires are careless, and when wires rub together a fire may begin. In some cities all electric wires must be placed in metal tubes.

HOW EACH ONE OF US MAY HELP TO PREVENT FIRES

Another reason why we have so many fires is that so many of us are careless. Matches are so cheap that we use more than any other people, and too often we throw one away without being entirely sure that the flame has gone out. Many people are careless enough to throw burnt match sticks into waste baskets. Thousands of fires start in this way. People are often foolish enough to light matches where gasoline or kerosene is stored. The fumes of gasoline may catch fire though the flame is several feet from the liquid. That is the reason why smoking is forbidden in garages. Kerosene does not vaporize so easily.

Perhaps we drop one of the old-fashioned kind and some one steps on it; or matches are left where mice or rats can get at them. It is very easy to keep matches in a metal box or in a jar, but very few people take this trouble. If we used only safety matches there would be fewer fires. If we do carry ordinary matches about with us we should always keep them in a metal box, and when we light one be sure that it can do no damage before we throw away the stick.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5793.

PRESENT AND FUTURE IN FIRE ENGINES



No sight is more thrilling than to see a fire engine on a city street. The galloping horses, with sparks flying from their feet, the clanging bell, the whistle, the smoke pouring from the engine, all unite to make an impression which is never forgotten. In many cities horse-drawn engines are being supplanted by motor-driven engines, like those shown below. In the largest cities an engine like this will soon be rare.



The newest fire engines are powerful motor-driven vehicles. When the fire is reached, the same engine pumps the water. Though these engines reach the fire much more quickly, and pump more water than the horse-drawn steam engines, many are sorry to see the horses go. The new is less picturesque than the old. Some of these new engines can go as fast as a racing motor car, but seldom go very rapidly.

THE GUARDIANS OF THE HARBOR



Some of the piers in New York Harbor are a fifth of a mile long, and a fire near the end, or on a ship lying beside the pier, cannot be fought to advantage from the shore. These fire boats are swift, and since they have an unlimited supply of water can drown out any ordinary fire. Each has several nozzles.



Firemen attack a fire from every point. Some drag hose into the building if possible; others direct the water tower or send streams from the ground or an adjoining building. Here we see two firemen holding with difficulty the nozzle of a hose, which has been carried to the top of an adjoining building.

FIGHTING FIRE IN ZERO WEATHER



In cold weather when the wind is blowing, the spray may freeze as it falls, and add greatly both to the discomfort of the firemen, and to the difficulty of the task. Here we see that both engine and firemen are covered with ice. One moment the hardy firemen may be exposed to excessive heat and the next to terrible cold, which chills them to the bone. Such discomfort is accepted as a matter of course.



One of the most destructive fires in many years caused the destruction of the Equitable Building in New York City in January, 1912. The fire was discovered during the night, and the loss of life was small. In spite of all the efforts of the fire department, the property loss was enormous. Traffic was suspended on Broadway for several days, and trains in the subway, which here runs under the street, were stopped.

ALMOST CONQUERED BUT NOT QUITE



Some of the worst fires occur in the coldest weather. The fire is almost out, but several streams of water are still playing on the building from lines of hose which have been carried through the building across the street. The hook and ladder truck has been frozen to the ground and almost buried by the ice which formed while the water was being poured into the building. The fire may smoulder for days.

SAVING LIFE A FIREMAN'S DUTY



Such a scene as this is in the day's work of a fireman. If the stairway is blocked a ladder is run up to a window, firemen clamber up and bring out any who are helpless from age or sickness or who have been overcome by smoke. We see them here bringing down some one from the third story. The firemen make many daring rescues every year. Sometimes they save many in a single day, or even in a single fire.



This is one of the latest developments in rescue work. The men you see have on helmets which cover their heads and faces entirely. On their backs are cylinders which generate oxygen, and purify the air which the men breathe out. Thus equipped they can go into a building, even though it be filled with the thickest smoke, or even with poisonous fumes, without suffering any harm. They are called the "smoke squad."

A WATER TOWER IN ACTION



The water tower is a valuable aid in fighting fire. While going to the fire, it lies flat on the truck. When the fire is reached, it is raised and extended to the desired height. It can then send the water directly on the fire even if it is far back in the building. Another nozzle is on the truck.

Photograph by Underwood and Underwood, New York.

FIRE BOATS SAVING THE CITY IN THE GREAT HOBOKEN FIRE



In 1900 fire broke out among the liners at their piers in Hoboken, opposite New York City, and raged fiercely. The cables which held the ships were burned, and the great vessels swung out into the stream. One drifted across to the New York side and the piers there caught. But for the wonderful work of the fire boats, it is probable that both cities would have been swept by a disastrous conflagration. In spite of all efforts, many persons in the ships lost their lives.

5769

PLATO TEACHING IN HIS OPEN-AIR SCHOOL



Near Athens was a beautiful plantation that was called the Academy, after one of the Greek heroes, Academus, who had once owned the place. Here, amid the plane and olive trees, Plato gathered his disciples and held his open-air school, and in the picture we see him teaching his followers, many of whom were old men. After Plato died, the Academy was for many centuries still used as a place in which philosophers taught their disciples.



THE SEARCH FOR A HAPPY MAN

CONTINUED FROM 5680

ONCE upon a time an Emperor of China yearned for the sight of one human being who was really happy.

"I am like the sun," he thought to himself—"like the sun, which only picks out the mountain-tops in gold, but whose beams shed no such splendor on the valleys below."

And having turned this matter over in his mind awhile, he bade his chief master of ceremonies lay before him the list of his civil servants.

The master of ceremonies bowed and departed, and soon afterwards returned, bringing with him 666 paper scrolls, each 66 yards long. And even these had barely room for all the names.

"What a formidable host!" cried the emperor, and then, pointing to a name in the list, he charged the master of ceremonies to find out what manner of man he was.

The emperor was wont to have his wishes carried out with lightning speed, and ere he had time to count 10,000, his messenger was back, and, with a very low bow, announced:

"The man about whom your august Majesty deigns to ask is Tun-Li, an old and trusted servant of yours. Honorable and discreet as an official, he is also a model father of a family."

"Then shall well-merited happiness be his portion," cried the emperor, "for I will gladden his heart with a glance of my eyes. Go, therefore, and tell him that I have vouchsafed to admit him and his family to pay homage to the Son of Heaven on the first day of the coming month."

"Assuredly Tun-Li will die of joy!" said the chief master of ceremonies.

"Nay, let us hope he may see and live," replied the good monarch, his features wreathed in smiles as he spoke. "And now go and make known my wishes."

"Well, what news?" he asked, when his messenger reappeared.

"Your most sacred will has been done, almighty Son of the Skies," replied the other, falling at the emperor's feet. "Your gracious command has been communicated to Tun-Li, with the flourish of trumpets, amid the loud acclamations of the people whose house your wisdom has exalted."

"And how did Tun-Li receive the tidings?"

"Sheer joy seems to have robbed him of his wits. Never before were such rejoicings witnessed upon earth!"

Like all things to which we look forward, the day for Tun-Li's audience seemed slow in coming, and

the emperor grew weary of waiting, for he yearned to behold a happy man.

Wherefore, one evening, disguised as a common coolie, together with a companion, he wended his way to that distant quarter of Pekin where Tun-Li dwelt.

And while still afar off, he heard a noise of shouting in the house of Tun-Li.

"Can the rejoicings be indeed so great?" thought the emperor, astonished and delighted.

As he approached, the sounds grew clearer, and at last he distinguished words.

"O most wicked of wives, most despicable creature the sun ever shone upon!" shouted Tun-Li. "Accursed be the day and the hour when I wed you. Of a truth, evil spirits must have possessed me!"

"For three hundred moons have we been married," replied a woman's voice, "yet never till to-day has an angry word passed your lips. You always found me true, and never failed to praise me."

"Well, and what of it? Have we ever before been summoned to the dread presence of the emperor?" thundered Tun-Li. "But now you will cover me with disgrace—you will make me the laughing-stock of the city! What do you know of making the three-and-thirty graceful curtsies which etiquette calls for? O could I but move the earth to swallow me up for very shame of you—aye, of you and of our daughter!"

"Dearest father," sobbed Tun-Li's daughter, "have you not always said that I was your beautiful Mu-Sian?"

"Well, and what if I have? Words will not make your feet small and dainty. They are over seven inches long!" cried Tun-Li, sorely perplexed. "I am sure the emperor will die of fright when he beholds such a terrible foot!"

"O father dear, you forget that if my feet are not tiny, neither have I been brought up to be carried about in a sedan-chair," wailed poor Mu-Sian, in tears. "My feet at least serve me to walk with. And when my turn comes, I, too, shall be obliged to marry a humble and struggling official of your own rank. For have I not been trained to do work?"

Just then the gong sounded over the door, and a moneylender strode in.

"How now, Tun-Li?" he cried. "Have you thought over my terms?"

"If I agree to your terms, we must all die of hunger," hoarsely whispered Tun-Li, burying his face in his hands.

"Do as you choose, then!" retorted the moneylender. "But bear in mind that time is on the wing. Hesitate a little longer, and there will be no blue silk robe with gold-embroidered sleeves for you, no stitched silk dress for your wife, and no garment with lotus patterns for your daughter. You know my price; you must pay it or do without the things which you cannot dispense with if you are to appear before the emperor. What do you mean to do?"

"Have your way, then; I have no choice. I must do as you say," murmured Tun-Li despondently.

"Good! Let me again remind you, then, of the conditions, so that there may be no dispute later. I undertake to supply you with all you need for this Court function; you, on your part, will hand over to me three-quarters of your income on the first of each month."

"But we shall surely die of hunger, man!" cried Tun-Li, and smote his hands together in despair. "Take the half, and don't ruin us outright!"

Tun-Li, his wife, and Mu-Sian fell on their knees before the moneylender, and begged him to be content with half of Tun-Li's salary, adding: "And even then starvation will haunt us all our lives!"

But the man refused to yield.

"No; three-quarters of your income every month! That is my last word!" shouted the man. "And now yours must be either Yes or No. Which is it?"

And Tun-Li, his voice muffled till it could hardly be heard, answered:

"It shall be as you say."

"O heavens, what a scene!" muttered the unseen emperor, as he witnessed this misery in Tun-Li's home, and the tears coursed down his cheeks.

Then the emperor returned to his palace and donned his usual robes. And the chief master of ceremonies, dropping at the emperor's feet, began to address him, saying, "Almighty one."

"Let me never hear that name again," commanded the monarch, moved to wrath. "Can he be called almighty who is powerless to make one man happy?"

At this thought his eyes again grew tremulous with tears. And he thought once more, this time in sadness:

"I am indeed like the sun, which from afar illumines and warms, but when at too close quarters to the earth blights all things that live and thrive thereon."

THE MAN WHO DROVE DOWNSTAIRS

ON a high hill on the west bank of the River Danube stands the Royal Palace of the kingdom of Hungary, surrounded by the ancient city of Buda, and looking across the river at the twin city of Pesth. These two cities were united in the year 1872, and we know them as Budapesth, the capital of Hungary.

In a splendid mansion near to the Royal Palace there lived, in the beginning of the nineteenth century, one Count Sandor, a wealthy nobleman who was the proud owner of a large number of the finest horses in the country. The Hungarians, like the Russian Cossacks, have always been famed for their skill as horsemen, but Count Sandor excelled his fellow-countrymen in riding and driving his splendid steeds.

Eccentric and reckless, the count would engage in the most daring and dangerous feats, forcing his spirited horses to plunge down from rocky heights, and to clamber up almost perpendicular cliffs. When the ice of the Danube was breaking up he would cross the river from shore to shore, jumping from ice floe to ice floe. Leaping fences and walls, streams and chasms, was as nothing to this intrepid rider, and he would even leap over moving carriages at a single bound.

The guests of Count Sandor had need to be fearless, too, for they never knew on what strange coaching expedition their host might take them, or what strange pranks his horses would play them; for the count trained his horses to send their riders flying over their heads, a most unpleasant, and often dangerous, surprise for inexperienced riders. One of the count's most reckless exploits occurred one day in the year, 1827. Accompanied by a German artist, named John Presstel, and a footman, he set out from his mansion in an open carriage drawn by four of his finest horses. The winding street leading down from the rocky citadel ran past a steep flight of stone steps, which had been built to save the dwellers in the lower town a long, round-about journey up to the centre of the town. Suddenly, as they were about to pass the head of this staircase, the count calmly turned aside the leading pair of his four-in-hand, and drove team and carriage and all headlong down the stone staircase. Artist and footman held their breath, and clung hard to the sides of the carriage as the wheels bumped down the hard steps, wondering, doubtless, if the wheels would stand such a succession of violent shocks, and greatly amazed at the daring spirit of the driver. He, calm and collected, skilfully guided his four horses, and the strong and sure-footed animals held on their course, and reached the street below without accident. Only when the roadway had been safely reached, and the four splendidly trained animals were prancing gaily along the level ground once more, did the two passengers breathe freely. The artist, John Presstel, often sketched the daring feats of horsemanship of the count, and he added a sketch of this incident in which he had taken part to the collection of curious and striking pictures, which has been preserved for many years, and is known as the Sandor Album.



The Count drove headlong down the steps.

THE KING'S DAUGHTER

IN a great room, magnificent with silken hangings, a beautiful girl paced restlessly to and fro. And now and then she would pause for a moment before one of the great mirrors which paneled the walls to gaze with wide-open, searching eyes at the pale face that looked back into her own, and sigh and pass on wearily. In spite of the luxury and the care that surrounded her, in spite of the devotion of her ladies, scarce a day passed that she did not bemoan her fate. She envied the lot of her fair waiting-maids, whose laughter floated in through the window; envied the simple joys and the physical hardships of the peasant woman as she went singing past the palace.

Poor Princess! So far apart did she stand by virtue of her rank from the rest of the world, that not one companion could she boast. Alone and solitary she spent her days, till she grew weary and listless, caring for nothing, paying no heed to the efforts of her ladies when in pity they sought to arouse her. And the days passed, till gradually the meaning of whispered comments, careless words—half fears, half jests—forced itself upon her mind. Trouble was in the air.

The signs were everywhere. The guard before the palace had been doubled; restless groups of men and women gathered at street corners; ominous murmurings breathed their warning, like sullen clouds before a threatening storm.

And day by day the unrest spread. The little crowds grew and merged at last into a great multitude of people, who flung themselves against the palace gates, proclaiming their grievance with angry voices.

From her window the Princess looked down and marveled. An old man lifted his arms, and shrieked aloud as a young girl snatched a crust of bread out of his hand and ran off with it. And all at once the meaning dawned upon her. It was bread the people were clamoring for—bread for hungry men and women, food for their starving children. Bad times had come upon the land, and to whom should they appeal but to their King—to the man who had taken their all, who had ground them down, year in, year out; who had seized lands and filched the savings of the poor to swell the coffers of the rich? In their misery they called upon their King to deliver them.

But the King shut his ears and hardened his heart.

"Fire on the rabble if they will not scatter," he commanded.

The command was obeyed, and the Princess shuddered and covered her eyes. When she looked again the people had broken through the barriers, and were heaping up faggots of wood, pile upon pile, against the palace walls, shouting curses on the King who had brought this great calamity about.

And in the distance men were running quickly forward, bearing lighted torches in their hands.

The Princess started to her feet. Her eyes shone; her mind was working rapidly. Why should this terrible thing be? Food—bread was what they wanted. They were mad, frenzied, tortured by misery and hunger. Of what use was all this luxury, this costly splendor, if it were impotent now? Bread there was none. But gold there was—ornaments, jewels, plate—there was gold everywhere.

With hands that trembled she gathered the costliest pieces together, fleeing breathless from room to room; and then, clasping her treasure firmly against her beating heart, she made her way to a little secret door at the back of the palace.

Her hands sought the lock, and as the door swung back these words fell on her ears:

"Sit on your thrones and roast with your crown upon your head."

She faltered. They were desperate, dared she face them? Would they not rend her in pieces before she could make her purpose known? But while she hesitated her opportunity would be gone. She stepped out with her golden burden in her arms to meet the mob.

"I, if I perish, perish; in the name of God I go."

Christina Rossetti, who tells the story in one of her poems, sends her out to meet the mob with these noble words, and leaves us to guess the ending. Surely the people would be so taken by surprise at the sudden apparition that there would be time to appreciate her noble action. And surely, too, so fine an impulse could not fail to have its effect on the hard heart of the King. The ending is a happy one—there could be no other.

TALES ABOUT THE TREES

WHY THE BIRCH-TREE HAS RINGS

THE birch-tree had always provided teachers with a weapon that could be used for punishing the lazy and unruly. But Hiawatha, the spirit of progress, urged the birch not to lend himself to such a purpose.

The birch, however, took no notice of the appeals of Hiawatha, so at last the spirit of progress took a bundle of the twigs and inflicted on the trunk of the tree the punishment that he had so often inflicted upon others. The whipping left marks upon the trunk of the tree, and that is why the birch has, ever since, borne rings upon its bark.

WHY POPLAR LEAVES ARE SILVER-LINED

THE great Greek hero Hercules had some splendid oxen which he had brought from Spain, but one day, when he slept, a giant named Cacus, who lived in a mountain cave, and used to plunder all the peasants round, came and drove off some of the oxen.

He dragged the animals backwards by their tails, so that their owner could not follow their foot-tracks; but Hercules happened to pass by the giant's cave with his remaining oxen, and those inside bellowed to those outside, and so the hero went in and, after slaying the giant, recaptured his oxen.

When he came out he plucked a branch of poplar from a tree and made a victor's crown, which he put on his head. Soon after his labors took him into the region of fire, and the outsides of the leaves were blackened by the thick smoke, but the under-sides were kept fresh and cool by the silvery moisture on the brow of Hercules. Ever since that time the poplar's leaves have been silver-lined, as we know them.

THE MAN WHO LOVED A CHERRY TREE

A JAPANESE boy used to play under the shadow of a beautiful cherry-tree, and every year its fallen blossoms made a delightful carpet upon which he could sit and rest.

The boy grew up and had a family, but he always loved the cherry-tree as though it were a human being. Then one by one his relatives and friends died, and at last the man became so old and weak that it was as much as he could do to make his way to the tree. But every day he would sit and talk to it of the old days.

But, alas! one winter morning it was seen that the tree was dying. The cold had nipped its very roots, and the poor old man was heart-broken. What could he do to save his tree? He determined to lie upon its roots all day and all night, to see whether he could not, by the warmth of his body, put new life into the tree. And on the next morning, when they went to look for the old man, they found him cold and frozen, but the tree had revived, and was putting on its garment of early blossom.

THE CYPRESS THAT MOURNS FOR EVER

CYPARISSUS, the youthful grandson of Hercules, had as a playmate a beautiful stag, of which he was passionately fond.

All their days they spent together in the woods; but one day the youth accidentally killed the stag, and his grief knew no bounds. He begged the gods that he might be allowed to remain for ever under the open sky, there to mourn his slain friend, and this wish the gods granted. In order that he might mourn without difficulty, Apollo changed the youth into a cypress, and the tree became the symbol of mourning.

THE TREE WITH HEALING IN ITS LEAVES

IN the depths of the Peruvian forest lived a tribe that fed largely upon fruit, and drew its water from a pool that never ran dry. But one night a great and strong wind blew down a number of cinchona-trees, throwing them into the pool, making the water hard and bitter, so that the tribe had to seek water from another source.

A little later two men fell ill of fever, and the native doctors gave up all hope that they would recover. They became so weak that when the tribe went some distance away to bring water for drinking and cooking the two sick men could not go. Their thirst, however, was intense, and they determined to crawl down to the pool and drink its bitter waters.

They did so, and, to their astonishment, felt better. Then they drank more, and gradually the fever left them. The wise men of the tribe knew that it must be the fallen cinchona-trees that had given the water its healing properties, and since that time Peruvian bark and quinine, which come from the cinchona-tree, have been used as medicines.

THE NEXT STORIES ARE ON PAGE 5835.

TWO GEMS OF THE ROCKIES



Among the Rocky Mountains are some beautiful sheets of water. Lake Louise, the "Lake in the Clouds," is surpassed in beauty by none of the famous lakes of which poets have sung in the past. The snow-covered mountains with forest round their bases, which shut it in, are reflected in the water.



Not far from Field, British Columbia, is Emerald Lake, which some travelers consider even more beautiful than Lake Louise. The enterprise of the railway company has built great hotels along the route, in which one may live in comfort while feasting the eyes upon the wonderful works of Nature. The name of the lake was suggested by the color of the water, which is a clear emerald green, encircled by trees.

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A MOUNTAIN STREAM IN THE ROCKIES

THE CANADIAN ROCKIES AND BEYOND

CONTINUED FROM 5613

THE Rocky Mountains in Canada form a stupendous boundary line between the prairie provinces and their sister province of British Columbia, to the west. The eastern foot-hills, and the eastern slopes with their rich coal mines, are in Alberta. The boundary line runs along the great divide, and the western slopes of the mountains, and the mountains beyond them, are in British Columbia.

The provinces on the extreme east of Canada are called the Maritime Provinces. British Columbia, the province on the extreme west, might well be called by the same name. She might with equal truth be called the Forest Province, but a better name than either is the Mountain Province.

The province is seven hundred miles long, by about four hundred miles wide, and with the exception of a small portion lying about the Peace River, east of the Rocky Mountains, this whole region is mountainous. Some one has described the region as being a "Sea of Mountains." Others have compared them to the Swiss Alps, others again say they cannot be compared to any other mountain region, since every mountain range has a special character of its own.

Many attempts have been made to describe the Rocky Mountains, and the mountains of British Columbia, but all have failed. No language that is spoken has words that will fit their beauty and their grandeur. Imagine, if you can, range after range of towering mountains, their peaks covered with perpetual snow, their sides clothed with evergreens and threaded with silver streams. Alpine meadows are jeweled with flowers of every hue, glaciers hang from the mountain sides, palisades of hanging snow add to the enchanting array, and everywhere the stainless white of the snow-covered peaks stands out against the sky. Mountain peak rises above mountain peak, while rushing waters and lakes give color to the scene. Steep forest-clad slopes rise through lofty glaciers. Lakes with water as clear as crystal and walled in by tremendous cliffs relieve the scene. The everlasting silence is broken only by the thunder of mighty waterfalls, or the music of cataracts of surpassing beauty. The marvelous grandeur is enriched by mountain lakes or tarns nestling among the clouds and encircled by majestic peaks.

Very often we think of the western

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mountains as if all belonged to one group or range. Really there are four distinct ranges. Chief among them, of course, are the Rocky Mountains; then come the Selkirks; the Coast Range stands on the western coast, with its feet in the sea; and out beyond the mainland, the highest parts of a sunken mountain range rise above the waters of the Pacific, and are called the Island Range. In between the Selkirks and the Coast Range lies a high plateau. The mountains on the east and west of this plateau rob the clouds of their moisture, so that it receives little rain. The rivers which run through it, cut down deep below its surface, and consequently it is much less fertile than the other parts of the mountain province, and in places it is arid. There are no forests on the plateau.

THE MOUNTAIN PEAKS OF THE CANADIAN ROCKIES

The Canadian Rockies are a continuation of the United States chain of the Rocky Mountains. The average height along the American boundary is eight thousand feet, but the climax is reached between fifty and fifty-two degrees north latitude. Here the Saskatchewan and the Athabasca Rivers take their rise in the glacier of the loftiest valleys of the range, and, breaking through the passes, flow through the Central Plain. Several peaks along the boundary reach ten thousand feet in height, but the highest of them are Mount Logan (19,939 feet,) Mount Vancouver (15,617 feet), and Mount Hubbard (16,400 feet).

There are many well-known passes over the mountains, of which the most important are the Boundary (7,100 feet), the Crow's Nest (5,500 feet), the Kicking-Horse (5,300 feet), through which passes the Canadian Pacific Railway, Peace River (2,000 feet), through which flows the river of the same name, and the Tête Jaune, or Yellowhead, through which the Canadian Northern and the Grand Trunk Pacific Railways have been built.

The Rocky Mountains are correctly named, as the summits are massive edges of broken limestone, bare of soil and covered with perpetual snow. The effect of their great height is diminished on the eastern side by the rise of the foot-hills and the height of the passes. It is only on descending into the western valley that the full height is appreciated. The western slopes are the more densely wooded. On the eastern side the slopes are partly covered with trees, partly grassy prairies and partly barren rock.

Frequently whole mountain ridges are formed of massive limestone strata uplifted and upturned on edges. Thus the mountains present to the traveler from the east abrupt and serrated outlines as they go northward. The action of the weather—snow and frost, furious tempests and summer sun—has not had time to wear them down, and their acute summit peaks tell the student of geology that they are young as mountain ranges go. The width of the Canadian Rocky Mountains at the boundary line is about sixty miles, but they gradually narrow as they go northwards. These mountains contain billions of tons of the finest bituminous and anthracite coal.

Parallel to the west of the Rocky Mountains, and sometimes under one name with them, run the Selkirk Mountains. Geologists, however, show that these mountains are older than the Rockies, and that they are formed of an entirely different series of rocks. The Selkirks, moreover, do not form a continuous range. In fact it is so broken that the range has received several names in different parts of its course. Entering from the south in a three-fold system, and divided by important valleys, the mountains have been called respectively the Purcell, the Selkirk and the Gold Mountains. The Columbia River runs northward in the deep valley, which divides the Rocky Mountains from the Selkirks, for a hundred and fifty miles. Then finding a break in the mountain range, it turns sharply to the southwest to find a way to the Pacific Ocean. North of this bend the range is called the Caribou Mountains.

The Selkirk Mountains do not reach the great height of the Rockies, but they are, if possible, more beautiful. The Columbia and the Kootenay Rivers, flowing round the mountains of the range, almost make a moat around them, as if to guard as in a fortress the treasures of gold and silver imprisoned within their rocky walls, by the forces of nature that built them. The great Illecillewaat Glacier, the Great Glacier of the Selkirks, is in these mountains. Trees grow to a height of four thousand, six thousand, and even seven thousand five hundred

ICEFIELDS AND FORESTS IN BRITISH COLUMBIA



In another part of our book you were told of glaciers, those great rivers of ice which slowly flow down from the mountains to the lowlands. Here is the great Asulkan Glacier, on the Selkirk Range in British Columbia. Crossing a glacier is dangerous as besides the slippery footing underneath, there are great cracks into which the traveler may fall. These cracks, which are called crevasses, may be many feet deep.

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The lumber interests of British Columbia are very important. Near the city of Vancouver is Stanley Park, in which grow some of the finest trees in America. The climate is mild and moist and vegetation grows with almost tropical luxuriance and almost twice as quickly as it grows elsewhere. The ferns you see are very tall though because of the size of the trees you do not realize their height.

feet above sea level; and the curious sight of snow meeting evergreens is seen.

Many abrupt peaks are found in the range, but the general character of the whole chain is less serrated than the Rockies, and the mountains are more kindly to climbers. The highest peaks are Mount Sir Donald (10,645 feet), Mount Macdonald (9,440 feet) and Mount Tupper (9,030 feet), all in the central range, which is always called the Selkirks.

THE COAST RANGE, IN WHICH WILD FIORDS ARE CUT

Descending from the Gold Range, the great plateau stretches for a distance of one hundred miles, to meet the Coast Range, the great western rim of the mainland, which rises on the ocean margin, and runs northward from the Fraser River with a width of a hundred miles. These mountains are often inaccurately called the Cascade Range, but geologists have shown that the Cascade Range of the United States is different not only in composition but in geologic age. They tell us that the Coast Range is a distinct system, and consists chiefly of crystalline rocks.

The peaks of these mountains are on an average from seven to eight thousand feet high. Four important rivers, the Taku, Stikine, Nass and Skeena, break their way through them. On the seaward side, the waves of the Pacific have eaten their way, up through valley openings, far into the land, and made great fiords, which exceed the Norway fiords in grandeur. Here and there the dark green of the forest is broken by the silvery gleam of leaping cataracts. Behind the barrier of the outer hills stand the towering forms of the everlasting mountains, their outlines bathed in purple shadows, their peaks covered with snow of dazzling whiteness.

The Coast Range is richly clothed with timber, which often reaches to the water's edge. The mountains in many places run down to the sea, in rugged spurs which rise boldly out of the sea in giant headlands and, lining the shores of the fiords with precipitous walls, show the full measure of their height to the observer, and leave on his mind an abiding picture of lonely majesty.

Between the Coast Range and the Island Range, the lower land has been submerged, and only the high land of Vancouver Island, and Queen Charlotte Islands rises above the ocean. Queen Charlotte Islands are a mountain group, in which gold, copper and iron ore, and anthracite coal are found. The island of Vancouver, which is much larger, has a length of two hundred and eighty-five miles. A chain of mountains runs through it. The western coast is indented with fiords, and lakes, rivers, forests and fertile farm lands add to its beauty. Gold, copper, iron and coal are found on the island. A national park, called Strathcona Park, has been set apart in the mountain region.

Fishing, mining and lumbering are the chief industries of British Columbia. The story of the mines and fisheries, however, belongs to another place and we shall not speak of them here. The lumbering industry, although it is large, is only in its infancy, for the forests are enormous and much of the mountain area can be used only as forest land. The people realize this fact, and the government of the province has already taken wise steps to conserve the timber.

Agriculture is not neglected. At one time the efforts of farmers were chiefly turned to cattle ranching, but, of late years, mixed farming has grown in favor, particularly in the rich river valleys, and a number of creameries are in operation. Fruit farming has proved very successful, and British Columbia apples especially have become famous.

IMPORTANT CITIES OF THE FAR CANADIAN WEST

Victoria, in Vancouver Island, is the capital of the province. It is the oldest city of the province, and has the distinction of having been founded in Hudson's Bay Company days, when it was known as Fort Camososuu. The city, with its wide, quiet streets, and private residences surrounded with small parks, has little in common with the average western city. Flowers bloom in its gardens the year round, and its delightful climate, and the beautiful scenery which surrounds it, make it a pleasant place in which to live. The observatory at Victoria possesses one of the finest telescopes on the continent. The city, which is built on the south-eastern end of the island, has a fine harbor.

Vancouver, on the mainland, about eighty miles across the strait from Victoria, is the commercial capital of the province, and has all the marks of a

MOUNTAIN AND SEA IN THE CANADIAN WEST



The Fraser River in British Columbia is rugged and swift for the greater part of its length, as it winds and twists along the way it has cut through the mountains. This graceful suspension bridge, which seems hardly able to bear the weight of a doll, is called Caribou Bridge and is strong enough for heavy traffic. Some parts of the river are navigable, other parts are so turbulent that boats cannot be used.



Vancouver is rapidly becoming one of the important ports of the world. From its wharves steamers go to every part of the world. This is the steamship Empress of China, built for trade with the Far East, where one can transfer to another ship under the British flag for the journey to Europe through the Panama Canal and across the Atlantic. Vancouver was founded in 1828 by the Hudson's Bay Company.

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bustling western city. This child of the Canadian Pacific Railway does not appear on the census of 1881, for it was then the site only of giant firs and cedars, some of which survive in its beautiful park. It is a thriving, progressive city, full to overflowing with wonderful vim and enterprise. The provincial university is here; and the public buildings, business blocks, churches, schools, libraries and clubs are equal to those of the older cities of the east. Vancouver is beautifully situated on the shores of Burrard Inlet, one of the deep fiords of the coast. The Inlet is a half mile wide at its mouth, and opens out to two miles in front of the city. It makes Vancouver Harbor, landlocked, sheltered from all points, deep enough for all vessels, open all winter, one of the finest harbors in the world.

Both these cities have connections by land and sea with all important points on the coast and in the interior, and steamship lines keep them in close touch with Japan and the dominions of New Zealand and Australia.

New Westminster, an important city near the mouth of the Fraser River, also has an excellent harbor. It is the centre of an agricultural district, and in addition has huge lumber mills, and many large manufactories, while a large number of salmon canneries have been built near it.

Nelson, in the heart of the Selkirk Mountains, is important as being the centre of a large mining district.

Prince Rupert, over five hundred miles to the north of Vancouver, may, like Vancouver, be said to be the child of the Canadian railway system, for it practically owes its existence to the fact that it is the terminus of the Grand Trunk Pacific. Like Victoria, it is built on an island, has a mild climate and a fine harbor, and is becoming an important seaport.



This shows the Valley of the Kicking Horse, the great pass over the Rockies through which the Bow River reaches the prairie. The Canadian Pacific Railway is built through this pass, and follows the winding of the Bow for many miles. This picture and the other pictures in this story give us an idea of the grandeur of the scenery in these great mountains.

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The three great transcontinental lines of the Dominion run through the great western mountain ranges, and have broken down the barriers which they raised between British Columbia and the other provinces. In addition they brought the knowledge of the mountains to the world, and the region is rapidly becoming one of the favorite playgrounds, not only of the Dominion, but of all the northern continent.

THE NEXT STORY OF CANADA IS IN THE NEXT VOLUME.

SCENES IN BRITISH COLUMBIA



The city of Victoria, which is well situated on the island of Vancouver, is an important city, and the seat of the government of the province of British Columbia. This picture of a pleasant part of the water-front gives an idea of the comfort of the city, of its well-paved streets and well-built houses. Victoria has a fine harbor and does a large Oriental trade. The city was founded in 1852 and was incorporated ten years later.



This picture shows how the melting snows send down streams to swell the rivers. The river in the foreground shows how the water cuts into the soil, and carries it away to deposit it on lower ground. If the mountains were not covered with forest, the erosion, as the process of wearing down is called, would be much more rapid. There are many scenes like this along the railways through the Rocky Mountains.

CLEOPATRA IN ALL HER SPLENDOUR



PRISONERS OF WAR BEING BROUGHT BEFORE CLEOPATRA, WHO IS SEATED IN HER CHARIOT



CLEOPATRA OF THE NILE

THE LAST QUEEN OF EGYPT

THE wit and beauty of a woman may be dangerous unless the woman has goodness also. In ancient times there were many beautiful and brilliant women, but these women helped, very often, only to make men worse, instead of making them better and nobler. Their wickedness was not regarded as misdoing. It was considered no worse for the famous women of the ancient world to live bad, selfish lives than it was, many centuries later, for Queen Elizabeth to bless the ships which were going to capture men, women, and children to sell them as slaves. There was less excuse for Queen Elizabeth than there was for the women of olden times. Let us, in charity, remember this now that we come to the amazing story of Cleopatra.

Cleopatra was born heiress to the throne of Egypt; the day came when she helped to rule half of the world. She was a daughter of the house of Ptolemy, from which the kings of Egypt had come for nearly three hundred years, and she was born to rule over the land which Moses ruled for Pharaoh. Her birth occurred sixty-nine years before the birth of Christ, and the king, her father, loved her. The young princess grew up lovely beyond comparison, and learned beyond, perhaps, all other women of her age. She was a Greek in blood, she was Greek in beauty, she was Greek in learning, but her natural talent was a blend of ancient Egypt, of which she was a daughter, of refined Greece, and of the more modern culture of Rome, which then ruled nearly all the known world.

All that the scholarship of the greatest professors could teach her, Cleopatra learned, but no teaching can give wit. Wit was born in her, wit and natural grace and all that charm which cannot be described, but which we often find in a gifted woman. She grew up in the greatest centre of learning in the world. Her home was Alexandria, the capital of Egypt. The city had been founded by Alexander the Great, and called after his name. In Cleopatra's day it was a city of libraries and schools, museums and palaces of art. To Alexandria flocked learned men from all parts of the earth. In art and philosophy and science Alexandria at one time stood alone in the world; there was no place to compare with it. Its doctors were the greatest that the world had seen.

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When Alexandria's greatness fell, half the knowledge of the world was blotted out. It took us many hundreds of years to relearn many of the great secrets which the learned surgeons and doctors of Alexandria had mastered. The library of Alexandria was the most famous in the world, and when it was destroyed the intellectual life of the world suffered a loss which we cannot measure. Although the greatness and power of Egypt had been almost lost before Cleopatra was born, much of its splendor and its learning remained. But its kings were weak and the magnificence of the court covered cruelty and wickedness. This, then, was the scene in the centre of which the beautiful young princess grew up.

Even when Cleopatra was only fourteen, she was famous for her beauty and learning. She could speak, so we are told, seven or eight languages, she was very musical, she knew history, and thoroughly understood politics and philosophy and art; she was quite a wonderful girl. When she was seventeen, her father died, and in accordance with the Egyptian custom, left the kingdom as a joint inheritance to her and her brother Ptolemy. Ptolemy was only a boy of twelve years old, and Cleopatra, who had a strong and vigorous mind, ruled for two years. But Ptolemy wished to have the power for himself. He declined to share the power with his sister, and as soon as he was able he pushed her off the throne. Possibly his advisers were more responsible than he; they did not like the daring spirit in which she sought to conduct the government of the country. Be that as it may, Cleopatra found it necessary to retire into Syria. But her proud spirit would not accept defeat like this; and she at once made preparations to regain her lost kingdom by force of arms.

Rome was mistress of the world. Egypt was still independent, but the claimants to the throne had already learned to go to Rome for help, and the Romans well knew the weakness of the kingdom. When this quarrel between Cleopatra and her brother Ptolemy arose, there was a similar struggle going on in Rome for mastery. Julius Cæsar had been for ten years away from Rome. He had conquered Gaul and invaded Britain. By his conquest of Gaul he had paved the way for the civilization of the world to the west. Other great Romans had been content to take their armies eastward, where easy conquests were to be won. While Cæsar was away, Pompey, as we read on page 5280, became his rival, and the power of Cæsar, whose conquests had won him great popularity and fame, was in danger. So he marched into Rome, and when Pompey fled, Cæsar followed him, and defeated him at the great battle of Pharsalia.

Pompey fled to Egypt, and there Cæsar followed him, to find the kingdom divided in the way we have seen. He determined to put an end to the struggle one way or another, lest war and unrest should spread into Roman dominions. Cleopatra determined to win him to her side. She was afraid to go openly to Cæsar's palace, so she had herself concealed in a roll of carpet. This was carried into the presence of Cæsar, and out she sprang. Such a vision of loveliness Cæsar had never before beheld — Cleopatra at nineteen, beautiful beyond words, gifted with all the arts and accomplishments that make a woman powerful. Cæsar's heart went out to the beautiful young queen, and he decided not only that the possession of the Egyptian throne should be settled, but that it should be settled in her favor. As Ptolemy and his advisers still refused to restore her to the throne, Cæsar made war upon them, and in the battle Ptolemy was killed.

But the man who had restored her to her throne loved her, and she loved him; and when he returned to Rome she soon afterwards followed him. Her presence in Rome as the lover of Cæsar created much scandal, even in that wicked city; but she stayed in defiance of it, fearing nothing as long as Cæsar, now the ruler of the world, was on her side. But, as we all know, Cæsar was murdered, and Cleopatra, lacking a protector, returned at once to her own country.

After Cæsar's death the power of the republic was again divided among three men. One was Caius Octavius, who was afterwards the Emperor Augustus; the second was Lepidus, who in five years was pushed out of the way; the third was Mark Antony, who, while Cleopatra was in Rome, had admired her beauty and charm. Octavius, who was the grandson of Cæsar's sister, had been adopted by Cæsar, and though he was only twenty at Cæsar's death, he showed great talent,

MARK ANTONY APPROACHES CLEOPATRA SEATED IN HER GALLEY



AT THE FIRST SIGHT OF THE EGYPTIAN QUEEN, MARK ANTONY WAS FASCINATED BY HER BEAUTY, AND FOR HER HE GAVE UP THE EMPIRE OF THE WORLD

This picture is from the painting by Sir Lawrence Alma-Tadema, R.A., and is reproduced by permission of the Berlin Photographic Company.

though not great humanity. But for this, Antony, who made the memorable speech over Cæsar's dead body of which we are told in Shakespeare, would himself have become sole ruler. But it was not to be. Just as Cæsar had met the lovely Queen of the Nile, so did Mark Antony. War followed Cæsar's death, and at the end of it Antony, who was in Cilicia, Asia Minor, sent for the Queen, to make her account for something which she had done during the war which he regarded as unfavorable to Rome.

CLEOPATRA'S VOYAGE ON THE CYDNUS

Instead of going as a penitent, she went in triumph. She sailed up the River Cydnus in state. It was in this river that Alexander the Great nearly lost his life. It was this voyage of Cleopatra up the Cydnus which cost Antony his power and half the world. There never was before, or since, such a procession as that of Cleopatra to see the great soldier and ruler who had meant to take her to task for what she was supposed to have done. She sailed like a goddess in a magnificent galley. It is said that part of the vessel was covered with gold, the sails were of purple, and the oars were of silver. The rowers rowed in time to the sweet strains of flutes and pipes and harps. Cleopatra lay under a canopy embroidered with gold, arrayed as a goddess; while rosy, dimpled boys gently fanned her.

When she arrived, Antony sent to invite her to supper; but she refused to go, saying that it was his duty to wait upon her, and Antony went. He was amazed at the reception she gave him, and the banquet she spread before him, the thousands of lights and splendors such as he, a man of the camp, had never before witnessed. He fell completely in love with her, as Cæsar had done, and neglected the affairs of the empire to return with her to Alexandria. In Alexandria they lived a life of the greatest luxury and extravagance, giving banquets and feasts such as even Alexandria had not previously known, but the story that Cleopatra dissolved pearls in vinegar or wine is, of course, not to be believed.

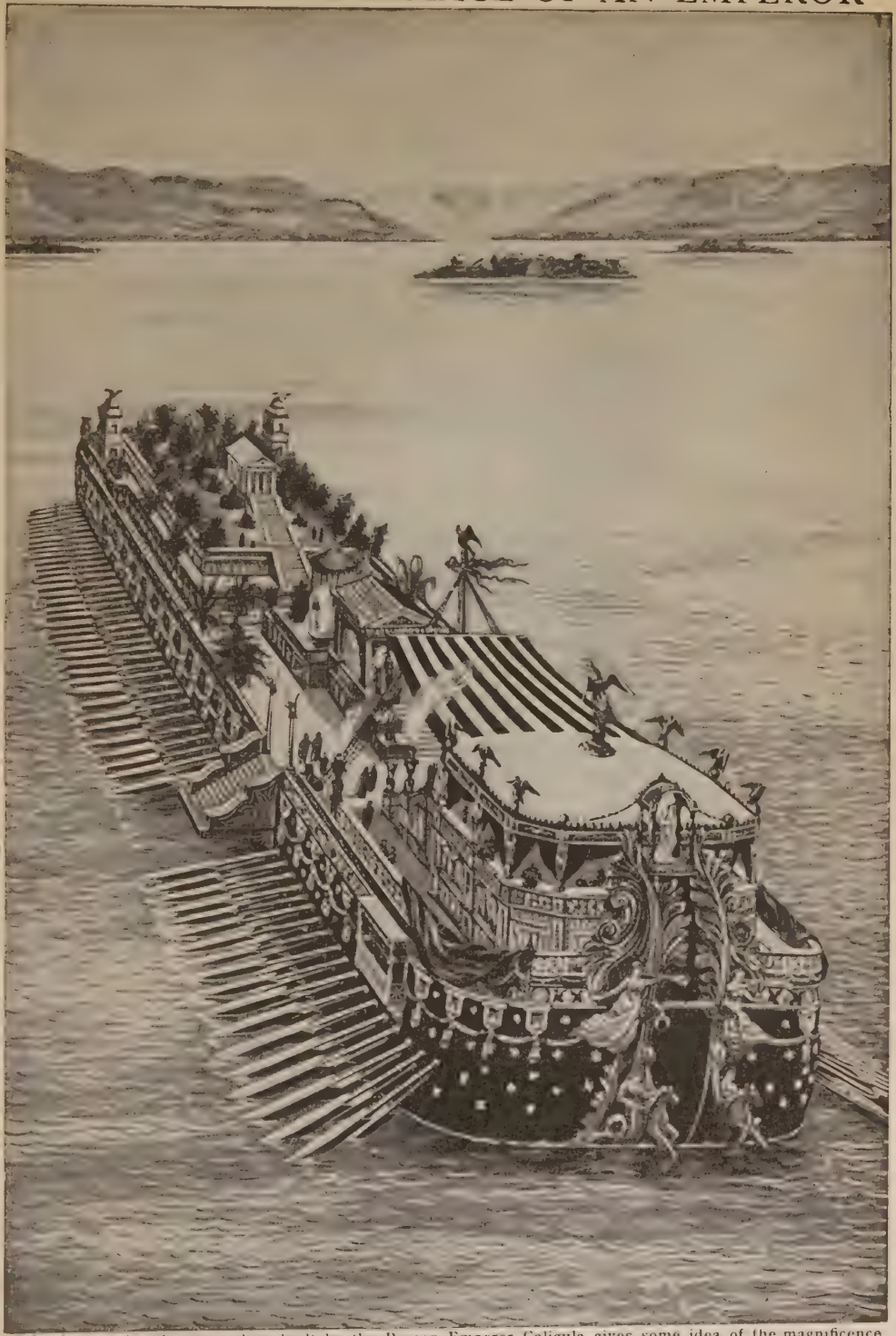
Together they rode, and hunted, and fished, and held reviews of the troops. When Antony was gay, Cleopatra made him more gay; when he was sad, she enlivened him with jest and music. At night she would go out with him, disguised as a servant, and he would put on similar clothing. They roamed together like thoughtless children, though she was queen of the land and he was ruler of half the known world. In her presence he forgot his manhood and his great responsibilities. They were out fishing one day, and Antony was unlucky. This, he thought, must disgrace him in the eyes of Cleopatra, so he ordered one of his men to slip secretly into the water, and to put on his hook fish which had already been caught. Cleopatra discovered the trick as fish after fish was brought up. She was too clever to let him think she had noticed it, and, instead, she expressed her surprise, and called the people's attention to his skill. Next day she called the people to see a fresh display by Antony as a fisherman. The vessel was crowded when Antony sat down to fish. As soon as he let down his line, Cleopatra quietly ordered one of her divers to put a salted fish on his hook. This Antony drew up, pretending that he had caught it; but the trick was discovered, amid shouts of laughter from the people.

At last Antony was recalled to Rome, where his family were at war with Octavius. He remained away from Egypt for three years, and in this time he married Octavia, the sister of Octavius. She was a good and noble woman, and made Antony a good wife, but, at the end of three years, war called Antony to the East again. He had hardly started before his thoughts turned to Cleopatra. He had set out to make war on the Parthians, but he gave up the war for the sake of the Egyptian beauty. She was probably glad to be able to exert her old power over him, and, by so doing, keep Egypt an independent kingdom. It needed but a word from Antony to have made it a miserable province of Rome—as, a few years later, it actually became.

He welcomed her with joy. He gave her Phœnicia, Syria, Cilicia, and a part of Judea and Arabia. But the countries were really not his to give; they belonged to the Roman nation.

The same life of extravagance and pleasure followed; there was no thought of serious duty, all attention was given to luxury and slothful ease. Antony's conduct roused the Romans, and Octavius now resolved to reign alone. This led to civil war again.

THE FLOATING PALACE OF AN EMPEROR



This picture of a floating palace built by the Roman Emperor Caligula gives some idea of the magnificence of Cleopatra's galley, for Caligula's remarkable vessel, the remains of which lie under the waters of Lake Nemi, in Italy, was probably made after the model of a galley belonging to one of Cleopatra's forefathers.

In preparation for the war, Cleopatra provided Antony with two hundred ships and money which, in our coinage, would amount to about twenty million dollars.

HOW CLEOPATRA FLED FROM THE BATTLE OF ACTIUM

Octavius advanced to meet him with a much smaller force, but his soldiers were in better training, because they had not been spoiled by luxury and laziness. Antony desired to fight on land, as he should have done, but Cleopatra, who accompanied him, persuaded him to fight at sea. This he did—at Actium, off the coast of Greece. It was one of the greatest battles of ancient times, but Antony ought to have won it. He must have won had he been fighting in a just cause. But just when the fortunes of the day were about to turn, Cleopatra, thinking that he was defeated, suddenly sailed away with her ships for Egypt. So much was Antony under her bad influence that he, the bravest soldier of Rome, actually deserted his fleet and followed the queen.

Antony hoped to find other troops faithful to him, though how he could expect such a thing, considering that he had fallen through his own fault, it is hard to understand. With his fall, the fate of Cleopatra seemed sealed, but she tried to make peace with Rome. Octavius caused it to be known that the only way in which she could win his favor was by her having Antony killed. What her answer to this proposal was we do not know, but it was evident that the end was near. Antony discovered that she had betrayed him to those against whom he had fought only for her sake.



CLEOPATRA ON THE NILE

Cleopatra, in an agony of fear, fled to a great tomb which she had prepared for herself, and caused a report to be sent to him that she was dead. Hearing this, Antony was heart-broken. He had with him a servant named Eros, who was under promise to kill him should Antony beg him to do so. Antony now called upon Eros to perform his vow. Eros drew his sword as if to slay his master, but, turning aside, he plunged the sword into his own bosom and died.

"This was greatly done, Eros," said Antony. "Thy heart would not permit thee to kill thy master, but thou hast

taught him by thy example what to do." He drew his sword and fell upon it. The blow was not at once fatal, and he begged those around to end his life. They fled from him, but a servant of Cleopatra drew near and said that she had sent for him. Hearing that Cleopatra was not dead, the spirit of the dying man revived, and he was carried, dying, to the tomb where she had hidden herself. She feared that if she opened the door, her enemies would rush in and overpower her; so she let down a cord and with the aid of her waiting women drew him up into the tomb, and there he died.

Meantime Octavius, who had followed Antony's retreat, was outside the city walls, where he was joined by Antony's deserting army. By a trick, a messenger sent by Octavius succeeded in taking Cleopatra prisoner, and immediately afterward the conqueror entered the city. But he wished to take Cleopatra in triumph to Rome, and to lull her fears, he treated her with honor, while at the same time he had her carefully guarded lest she should slay herself.

THE DEATH OF CLEOPATRA

He went to see her, professed great sympathy for her sorrow at the death of Antony, and permitted her to bury the dead soldier with splendor. But Cleopatra heard of Octavius' intentions to take her to Rome to grace his triumphal entry into the city, and determined to frustrate it.

She begged leave to go for the last time to visit Antony's tomb, and there she took a touching farewell of the dead. Then she dressed herself in her most beautiful garments, ordered supper, and sat down to eat it.

When Cæsar's officers returned, they found Cleopatra lying dead on a bed of gold. One of her waiting women also lay dead on the ground beside her. The other, who was placing the crown on her dead mistress' head, was dying, and died soon afterward. It is not known how Cleopatra succeeded in taking her life. One story is that she died from the bite of a venomous serpent, which was brought to her by a countryman hidden in a basket of figs, and this is the story that Shakespeare believed, and is the tale that he made the Roman soldiers tell in the play of Antony and Cleopatra.



CLEOPATRA DROPPING A PEARL INTO A GOBLET OF WINE

Cleopatra, who was only thirty-nine when she died, in the year 30 B. C., was the last Queen of Egypt. She was buried with all fitting pomp, and with her was buried the last trace of the ancient power of Egypt. From that time down through all the centuries to our own, the country has been nothing greater than a province in a larger empire.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5849.

DRAWING MILK FROM A TREE TO MAKE RUBBER



Here we see a native girl tapping a rubber tree in Ceylon. Holes or grooves are cut in the trunk of the tree, and in a few hours milky juice flows out and is caught in cups or tins. A good tree yields about twenty gallons of juice in a season, producing forty pounds of rubber. The juice is called caoutchouc, a native Indian word.



MARKING RUBBER ON A RUBBER PLANTATION IN BOLIVIA, SOUTH AMERICA

RIDING ON WHEELS OF AIR

THE STORY OF A BEETLE AND A RUBBER TUBE

CONTINUED FROM 5769

WHAT is this little tube of air, by means of which we visit places where there are no railways, as easily as if Ariel had given us his wings? Where does it come from—this wonderful substance which enables us to have telegraph cables under the sea, and walk dry shod through mire and snow?

It is simply a resinous, milky substance contained in rubber plants and trees. These trees live in hot, damp, tropical forests where there are swarms of wood-boring beetles. As soon as a beetle thrusts its boring weapon into the bark, the tree pours forth a poisonous sticky juice. It kills the insect, and at the same time fills up the wound which has been caused. When the tree is blown to and fro by the wind, the substance does not drop out, because the juice as it dries is elastic, and no matter how the tree sways, it still holds itself in place. Now the first to discover that rubber might be useful to man was not a wise, educated chemist, but some brown-skinned naked native of the South American tropics. One day cutting into the bark of a forest tree by accident or design with his stone hatchet, he saw the thick white milk running in from the wound, watched it grow firmer in the sun, and found that it hardened to a spongy substance. He discovered that it was liquid proof, and applied it to wounds, coating the sore spot with the fresh milk. Columbus found the Haitians playing with balls made of this substance when he went forth on his second voyage. And a traveler, named Torquemada, noticed, four hundred years ago, that the Mexican Indians used the same substance for making their cloaks waterproof.

But neither the Spanish conquerors of Central and South America nor the Portuguese conquerors of Brazil had for three centuries any inkling of how much this wonderful substance would mean to men. Towards the end of the eighteenth century, somebody discovered that it would remove pencil marks from paper, and people in Europe wanted it. When it was introduced into England about 1820, seventy-five cents was charged for a piece half an inch long. Artists used it and were

glad to pay that sum, for the rubber was invaluable to them for removing false marks from their sketches. Charles Macintosh, a thoughtful Scotsman, was the first in that country to put rubber to the use which the Indians had made of it; he used it to give us the first waterproof coats, and called them macintoshes after himself. Then it was discovered that rubber, which could withstand the effects of water, could not be penetrated by gas, and that the majority of other liquids, in addition to water, could not make their way through it. So surgeons had it made up into tubes. But the great discovery was yet to come.

How a clever inventor made rubber hard

In its natural state, rubber becomes solid under the influence of cold, and soft and sticky under the influence of heat. An American named Charles Goodyear, about whom you read elsewhere in the BOOK OF KNOWLEDGE, was the first to discover that all this could be altered by adding sulphur which has been melted by heat. The process is known as vulcanizing.



The common indiarubber plant of our conservatories.

By vulcanizing we can convert pure rubber into a substance resembling ebony. The black discs of which the gramophone records are made are of vulcanite; so are the black mouth-pieces of tobacco-pipes, the trays which we use for the acids in photography, and a thousand other things which we use every day. But there is another form of vulcanized rubber, the soft, of which we can make almost anything—casing for cables, springs for motors and carriages, buffers for railway trains, doorsteps, springs, bouncing balls, and so forth.

For a period of at least ten years Goodyear worked at the task of perfecting his invention, and sadly did he suffer from the scoffers of the time. He conquered in the end, after bitter suffering and poverty, and by 1844 he was triumphant. At about the same time a man named Thomas Hancock was at work on the same idea in England, so that two different men, in quite different parts of the world, were both working at the same scheme at the same time.

How the world to-day depends on rubber

What has this newly-treated rubber been used for? We can only speak of a few of its uses, for to treat of all would require a separate book. But it is rubber which first made cycling possible. There had been cycles long before—hobby horses, bone-shakers and other dreadful things of the same style. The rubber tire gave the bicycle new form, new life and dignity for the first time. But, as those of us who are old enough to have ridden the old tall bicycles will remember, the first rubber tires were small and solid. How they jolted and jarred along the stony roads, carrying the rider home with teeth aching and wrists almost shattered!

Motor-cars could never have run with tires of this sort, for the bumping over even the very best of roads would simply have shattered the engines to pieces in a short time.

Happily, in the last quarter of the nineteenth century, J. B. Dunlop of Dublin thought out the grand idea of making an air-cushion for a bicycle tire. These air-cushions had already been in use for about forty years, but they had not been applied to a bicycle rim. The principle of the first Dunlop tire was the same as that which makes a motor-car or bicycle ride so delightful to-day. The inner tube is made of comparatively soft, thin rubber. It is that which we blow up with air. The cover which fits over that is stout and hard, and simply protects the inner tube from injury. It is the tube filled with air beneath the cover which has worked the marvel. The wheels of the bicycle or car actually run on the compressed air in the pneumatic tube.

Rubber is used to make footwear and other waterproof clothing. What would our policemen, our firemen, our fishermen, and our soldiers do without this protection as they perform their duty often for hours amid the violence of the waters?

Mechanical goods, including hose, belting for machines and tires for trucks, are all made from rubber. In electrical appliances we can hardly do without it for insulating purposes. Our physicians and surgeons depend upon rubber for

much of their apparatus. In a liquid or semi-liquid form it has many uses; when mixed with lime it makes good cement. If rubber and coal-tar and shellac are heated together, a very sticky glue is formed. In special kinds of varnishes it is one of the ingredients, and it improves the lubricating qualities of mineral oils.

A DAY IN THE TROPICAL FOREST COLLECTING RUBBER

Let us go with the collector on his daily round in a part of the great rubber forests of Brazil. Most of the camps are on the great Amazon itself, or on one of its many streams, because these are the great highways of Brazil. There are generally both full-blooded Indians and native Brazilians working in the camp, and in this case, it is divided into two parts. On one side live the Indians in palm-leaf huts with their families, on the other, the natives in long, thatched buildings, open all round, with scores of hammocks strung from posts and beams. From the dwellings trails lead off into the forests in all directions.

The *seringueiro*, as he is called, gets up at four in the morning, and lantern in hand (for it is dark until six), sets out with his hatchet for gashing the trees. Following a trail, he gashes each rubber tree hastily, fixing a little cup below each wound, visiting each one of his hundred or so of trees and returning by another path to his hut for his coffee.

Later in the morning he must make a second round, or the milk will harden in the cups. He takes this time a bucket, and tips the contents of each cup into it, carefully leaving the cups upside down on bits of stick at the foot of the tree. When he returns with his milk he has to harden it over a fire of oily nuts in his smoking-hut. This has to be done while it is perfectly fresh, or otherwise the finished rubber will contain small holes like a cheese, and the merchant will grade it as inferior quality. Some of the natives pour the milk over a paddle and revolve it in a column of smoke till a ball weighing several pounds is formed. Some of them use a kind of shallow spool, off which the rubber can be slipped when smoked, and then cut into flat slabs.

A collector often walks from six to ten miles a day, for distances between each of his trees may be long ones. He works from four in the morning until sun-down, or more or less fourteen hours a day. But on an average he works only 160 days in the year for the milk does not run all the year, and besides, during the rainy season it is often impossible to stay in camp.

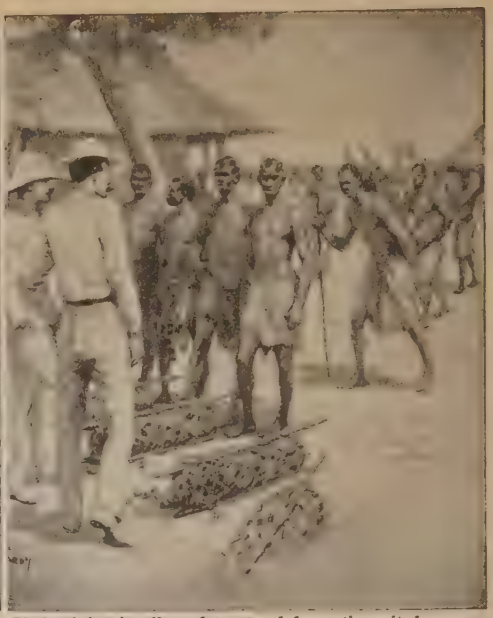
HOW THE WORLD'S SUPPLY OF RUBBER HAS BEEN ADDED TO

Although the best wild rubber comes from the trees on the banks of the Amazon in Brazil there are thick forests in other parts of South America, in Central America, and in Africa. In 1876 occurred an event which passed unnoticed at the time, but was to alter the fate of the Amazon Valley. An Englishman, Captain H. A. Wickham, went up the river and came back from his trip with cases full of rubber seed. It is said that he had 70,000 of these oval, mottled seeds. He took them to the famous Kew Gardens near London, and when after infinite care conditions were discovered under which the baby plant would live, a home was sought for them outside the chilly British Isles. It was decided that of all the dominions under the British flag Ceylon had a climate nearest to that of the Amazon, and it was in Ceylon that the first rubber tree flowered in 1881, the first time in history that a *hevea* had bloomed outside of Brazil. After patient care and long waiting the planted rubber came to yield not only in Ceylon, but in other parts of western Asia as well. In the last sixteen or seventeen years the export of plantation rubber has jumped from 4 tons to 140,000 tons—that is to say, that it is more than thirty thousand times as great as it was! Although plantation rubber comes into the market in a cleaner, better-looking condition, free from many of the impurities, such as earth, bark, leaves and wood, found in the wild rubber, yet the latter possesses greater strength and elasticity. Whether this is due to the presence in the balls and slabs of wild rubber of these foreign bodies which lend strength to the mass, or whether it is on account of the greater age of the trees in wild districts has not yet been determined. What is certain, though, is that the world will not outgrow its store of rubber, for not only is the plantation product yearly proving itself of greater and greater value, but inventors are busy over processes for making it artificially.

GATHERING RUBBER IN AN AFRICAN FOREST



Quantities of rubber come from the Congo Free State and other parts of tropical Africa, and here some natives are tapping the trees, while others are picking the fruit, from which to obtain seed for planting fresh groves of rubber trees. Much of the rubber that comes from Africa is obtained from climbing shrubs.



If the juice is allowed to stand for a time it becomes more or less solid, and the natives roll it into little balls. In this picture negroes are bringing the balls of rubber they have prepared to European traders for sale. Rubber, when first brought to Europe, was called elastic gum, and an inch cost over a dollar.



The balls of rubber have many impurities in them, and they are cleaned to some extent by being put in a sack and beaten, as shown in this picture. On proper rubber plantations, such as those in Ceylon and South America, the rubber is cleaned thoroughly by boiling.



The rubber is next cut into slices, ready for drying before it is sent to market. There are various methods of drying. Sometimes it is laid out in the sun or left upon racks, while at other times it is dried by fires. Some of these processes are shown on page 5798.

The photographs on these pages are by Underwood & Underwood, and Suarez, Hermanos & Company.

PAYING THE RUBBER MEN THEIR WAGES



When the natives of Africa bring the rubber that they have gathered in the forests to European settlements, it is weighed, and payment is made according to the amount delivered. Here we see the weighing of the rubber.



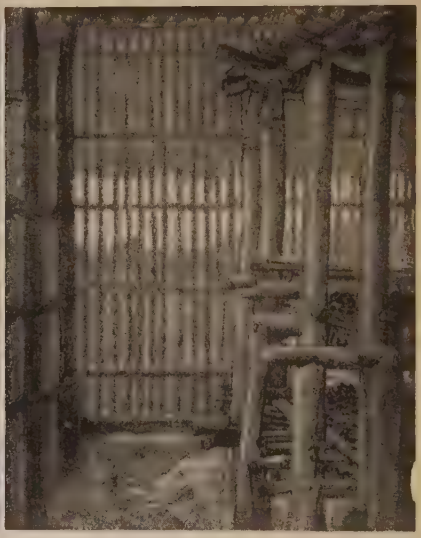
The natives usually receive payment, not in money, but in such articles as hats, brass rods, and so on. This picture gives us some idea of the scene when the negroes are being paid for the rubber. Many of the African rubber forests have been ruined by careless gathering of the rubber, owing to the great demand. In the Congo the forcing of the natives to collect rubber has been accompanied by terrible cruelties on the part of the rulers.

PREPARING THE RUBBER FOR USE IN CEYLON

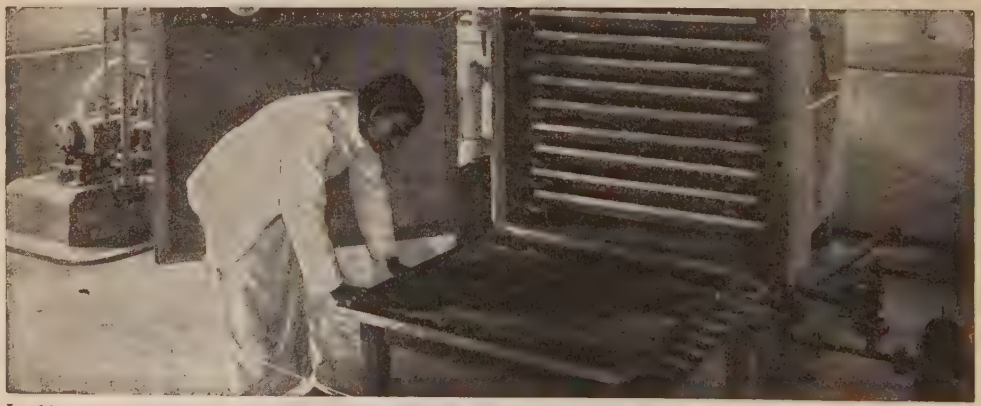


Every country has its own method of preparing rubber for use. The most scientific methods are used in South America. Here we see the inside of a rubber factory in Ceylon, where the material is being rolled out by natives after the juice has become solid. The basins standing on the right contain caoutchouc that is getting hard.





The picture on the left shows a drying-room in Ceylon. The rubber, which has been cut into strips, is allowed to hang up until it has dried in the ordinary natural way without artificial heat. On the right we see a corner of a drying-shed in Africa. The rubber is laid out on shelves until dry enough to take to European markets for sale.



In this picture a method of drying rubber by artificial heat which is used in Ceylon is shown. The rubber is placed in ovens, and is, of course, dried very quickly. After various processes, it is pressed into blocks and then cut into sheets or threads for use. Most of the rubber used to-day has sulphur mixed with it to make it more elastic and serviceable for use. This is called vulcanizing the rubber, and the discovery of the process has been of the greatest importance to the world, for without it rubber could be used for very few purposes indeed.

WONDERFUL TREES THAT GIVE US RUBBER



Indiarubber was regarded, a hundred years ago, as a curiosity for rubbing out pencil-marks. To-day the world barely gets enough for its many uses. This picture shows some of the great rubber trees in Ceylon,

THE NEXT FAMILIAR THINGS ARE ON PAGE 5857.

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THE GIANT OF THE FOREST IN A RAGE



An angry elephant is a terrible creature, and there is little hope for the traveller who gets in his way as he crashes through the forest, smashing down the trees.



A caravan in the forest attacked by fierce buffaloes.

WHEN MAN MEETS THE BEAST

CONTINUED FROM 5753



WHAT happens when an unarmed man meets a lion? Man has conquered the world and mastered the beast, but still there are times, in these days of travel and exploration, when men come suddenly upon the paths of a wild beast. In some parts of the earth wild life still lives on the edge of civilization, and fierce animals, whose ancestors the early men fought, still stand in the path to challenge man if he dares to invade the forest and the plain.

Europe, in places, still teems with wolves; the tiger roams from India to Manchuria; the lion lords it over a great part of Africa; the leopard is feared and hated alike in Africa and India; America has the deadly jaguar and the puma or cougar; bears inhabit both the Old World and the New. A man unarmed in the wilderness to-day is as helpless against these savage creatures as his forefathers were. Firearms are our greatest protection.

India has a terrible death-roll every year as the result of the war of the tiger upon mankind. The natives are naturally timid, a fact that the tiger soon learns. Many tribes believe that a human soul is imprisoned in the body of the tiger, and this makes them more than ever unwilling to slay their deadly enemy. A belief of this sort is, as we all know, very old. A tiger does not attack human beings from the beginning of its career. Many a tiger goes through life without killing a man. Some take naturally to the crime, but generally there is some sort of cause for it. Perhaps the tiger, coming out in the evening when a native is driving cattle home, attempts to seize a cow or a calf. The native seeks to drive it away, and the tiger kills him at a blow. At once its fear of man is gone. It finds him the easiest of all creatures to kill, and from that time human beings are its prey.

Now, in Africa, when a lion takes to eating men, the more warlike tribes sally out in a great hunting party, and kill the enemy, though they may have to sacrifice several lives of men in the attempt. The native of India, however, is of different temperament. Unless some European comes along with a gun, he will tamely submit to the frightful work of the tiger, so that one tiger has been known to kill over a hundred people in one district.

Even with the best of firearms, man is often no match for the tiger, which is in many respects an enemy to man more to be feared than the lion. Though without such a fine armor of defence as the lion has in its shaggy mane and collar, the tiger has a more

powerful jaw, and even a more terrible grip than the king of beasts; and the horror of an encounter with a tiger is heightened by the swiftness with which the creature acts.

The suddenness of a tiger's attack is, however, trying to the nerves of the bravest man. Sir Edward Bradford, who lived to tell the story of his adventure and afterward to command the police of London, had a horrifying experience of the speed with which a tiger, from being hunted, becomes the hunter. A tiger which he had been stalking was wounded, and crept along the dry bed of a river. Sir Edward sought to get down to the same level, but lost sight of the animal as it went round a rock. The tiger had, however, climbed up an unseen cattle-track, and, on reaching his level, charged furiously at Sir Edward, who tried to shoot the animal dead. Then a most unhappy thing occurred: a twig from an overhanging tree caught the trigger, and prevented the gun from going off.

A MAN IN A TIGER'S GRIP

The tiger seized Sir Edward by the left arm, and pulled him down and lay on him. The brave man had nerve enough to lie perfectly still, in order that one of his men, armed with a gun, might approach and fire, killing the brute as it lay upon him. Sir Edward lost his left arm below the elbow, but he was so keenly anxious to save his life at all costs that he did not feel the least twinge of pain. The mind in such a moment is so active in inventing ways of escape that it rises superior to physical suffering. It may not be so in every case, of course, but we know from many instances that this merciful provision of nature is not unusual.

This same merciful unconsciousness of pain was experienced by Livingstone, who had one of his arms badly bitten by a lion, yet felt no pain at the time. His brain was working so hard at a plan of escape that there was no room for thought of pain. Experiences like these and close observation of battles between animals have made careful thinkers believe that nature is not so cruel as some people have thought, and that in all probability animals killed by other animals do not suffer in their death conflict, but lose their lives in a painless struggle.

THE MAN WHO TOLD THE LION TO STOP

But, whatever the facts may be, the terror of a conflict with a wild animal is hideous enough to make us pity the man who must endure it. A lion met by daylight is never so terrible as if encountered at night. A man of good nerve may get the better of lions when the sun is up, without firing a shot. Lord Randolph Churchill rode into a troop of seven lions, but they did not attack him. Another man was charged by a lioness which had been injured, and was, therefore, doubly savage. He had not time to reload his gun, but he stood still and faced the charging beast. He cried in a loud voice to her, "Halloa, there, steady, steady!" The lioness slackened her pace, puzzled, and a little alarmed. She was not used to the human voice, particularly a voice used in a tone of command. She came on again, however, and this time the man flung his arms above his head, and shouted still louder and still more firmly. This completely upset the lioness's nerve, and, instead of springing on the man, she stopped, and allowed him slowly to retreat, when she turned tail and disappeared.

There is another story of the way in which a hunter met a troop of lions when his gun was empty. The only thing handy was his telescope, and he flung this with all his might at the lions, yelling at the same time at the top of his voice. A cat will flee from the garden if we pretend to throw a stone at him, and these big cats in the African wilds were no more courageous. At the sight of the flying telescope they fled. To see a man throw a thing is probably to an animal like some terrible magic.

A MAN WHO WAS TAKEN IN HIS SLEEP

But men do not often escape so lightly as this. A lion once jumped into an encampment, and seized a sleeping man. His cries aroused other men, and the lion was beaten off; but two or three hours later the lion crept silently back to the tent, and carried the man off, his comrades being unable to rescue him. The poor man was an English official who had been journeying to Uganda, where the lion has played sad havoc with human life.

Great Britain spent six years in build-



A POLAR BEAR DEFENDING ITS YOUNG AGAINST ARMED TRAVELERS IN GREENLAND



THE TERRIBLE SPRING OF THE LION UPON ITS PREY

IN THE PATH OF THE RHINOCEROS



THE END OF A BLACK RHINOCEROS, WHICH CAN GALLOP LIKE A HORSE



THE GREAT WHITE RHINOCEROS CHARGING A PARTY OF TRAVELERS

THE TERROR OF AN AFRICAN RIVER



THE HIPPOPOTAMUS, WHICH LIVES IN THE RIVERS OF AFRICA, ATTACKING A BOAT



A GREAT BULL ELEPHANT HELD AT BAY IN AN AFRICAN RIVER

ing a railway through Uganda. The railway begins at Mombasa, on the coast, and ends 584 miles inland, at the great lake Victoria Nyanza. It runs through the heart of the wilds, where lions and leopards and other ferocious animals abound. It was a strange picture, the coming of this railway into this dark, mysterious land, where the conditions of life had scarcely changed since the dawn of creation.

The lions had no respect for the works of man; they preyed so terribly upon the men who were building the railway that at one time the whole series of operations had to be stopped. The British Empire was, for the time being, defeated by lions, who killed so many men as to cause panic in the camp, though the men could not justly be called cowards.

THE MOVING SHADOW ON THE RAILWAY

The lions advanced, roaring, upon the camp at night; then a great silence would follow, showing that the beasts were seeking a way in. In a few moments a terrible cry from the camp would tell that they had found a way, and everybody knew that there would be a man missing from the roll-call in the morning. In nine months the lions killed twenty-eight men working on the railway, as well as a large number of natives who acted as camp-followers. It is supposed that this destruction was wrought by two lions only, and it is satisfactory to know that these creatures were killed by a brave officer named Lieutenant-Colonel Patterson, who was an engineer engaged in building the line. Mr. Patterson has written a book on these and other African adventures.

THE ELEPHANT CAST OUT BY HIS COMPANIONS

It is always painful to hear of the wanton destruction of elephants, which, when tamed, are such faithful and intelligent servants of man. But there are pleasant elephants and unpleasant elephants. There is no more terrible animal in the world than the rogue elephant. This is an elephant which, for some reason or other, has become separated from the rest of a herd, and is not permitted by the others to rejoin. He becomes an animal outlaw. In his rage and disappointment the elephant will kill human beings out of sheer wickedness, rushing at them, knocking them down, and killing them either with its tusks, or pounding them flat with its great feet. A hunt was organized after an Indian species of this sort which, in the course of four years, had surprised and killed nearly fifty natives. It was a monstrous animal, and though pursued by thirty men riding on elephants, the animal charged again and again, and was not killed until eighty shots had pierced its body.

THE DREADED LEOPARD

Although the leopard is smaller than the lion or the tiger, it is really more feared than either. It will attack human beings more readily than either of its two larger cousins, and it is more terrible from the fact that it is a great tree-climber, which the lion and tiger are not. Where a monkey can go a leopard can follow, and from the branch of a great tree, where it lies so close as to be unsuspected, it springs down upon man or animal, ready to use its powerful jaws and claws with terrible effect. As a rule, leopards do not eat human beings—they are content to kill them; but once they begin this frightful pursuit, they are as much to be dreaded in Asia and Africa as the worst of man-eating tigers and lions. Not long ago two friends were sitting with a dog in an East African farmhouse at night, when a monster leopard sprang through the open window. Dazzled by the light in the room, it tried to make its way through the doorway, but managed, unfortunately, to shut the door instead. Then the leopard turned upon the farmer, and, knocking from his hand a chair which he had picked up, dealt him a blow on the scalp.

The poor man had no firearms ready, and could only fight with his fists. This had little effect, but the farmer's dog rushed to his assistance, and boldly attacked the leopard, driving it towards the door, which the farmer had now managed to open. Feeling a draught of cold air rush in, the leopard sprang for the opening, and bolted out of the room, with the dog still hanging to its leg.

JAGUARS AND PUMAS

The jaguar and the puma are to America what leopards are to Asia and Africa. The jaguar is merciless to

A TERRIBLE MEETING WITH A BUFFALO



The South African buffalo with his sharp, hooked horns is one of the most terrible animals that man can meet. He is so fierce that he will charge a lion, and has even been known to conquer the king of beasts.

human beings, killing where it does not need food. A jaguar strolled into a South American town one evening and walked into an open church. Presently a priest made his way in, and was immediately killed. A second priest went to seek him, and he, too, was killed. A third priest followed, but he, by rushing from pillar to pillar, managed to avoid the spring of the jaguar, and made his way to the door. Banging it behind him, he escaped, and gave the alarm. Part of the roof of the church was removed, and through the opening men were able to shoot the cruel beast within.

In his book of travels in South America, Colonel Theodore Roosevelt retells a story which was told him by a man who was almost killed by a cougar. Early one morning, Dr. Moreno set out alone to make a sketch of a lake by which he had camped. He foolishly left his gun behind, and had not even a knife for defence, but luckily carried a compass in a leather case. He had not left his camp very far behind when, without warning, a cougar sprang on him from the bushes. Her weight and the shock brought him to the ground, and as he fell, she tried to seize his head with her claws. Happily, however, the morning was cold. He had wrapped a poncho of guanaco hide round his head and shoulders, and she failed to gain a hold on the leather. This saved his life. As man and beast rolled over in the struggle, the man freed himself for a moment and regained his feet. Quick as lightning, he snatched off his poncho, and opened it as a shield, and as the cougar sprang again, he swung his compass by its strap, and struck her on the head. This caused her to miss her aim. Her claws slipped on the poncho, and much puzzled she slunk off to try to get around him. He was too quick for her, however, and though she tried to attack him three or four times, and his face and shoulder were torn and bleeding, he succeeded in reaching the camp.

Though the jaguar was once common in North America it has become very rare. The puma or cougar is, however, found plentifully on both continents. This animal, often called the "mountain lion," is cowardly, but it can and will fight when cornered. Its cry is one of the most terrifying sounds the hunter hears.

These great cats are the worst animal foes of ranchmen on the American continents, for they cause terrible destruction among horses and cattle. Long, long ago, South America had native horses, but when the first Europeans landed in the country there was not a horse to be seen in the land.

It is now thought that the jaguar and puma were responsible for the destruction of the early American horses. Horses were wild in those days, and so did not have the protection of men.

A MAN'S FIGHT WITH A CROCODILE IN AN AFRICAN RIVER

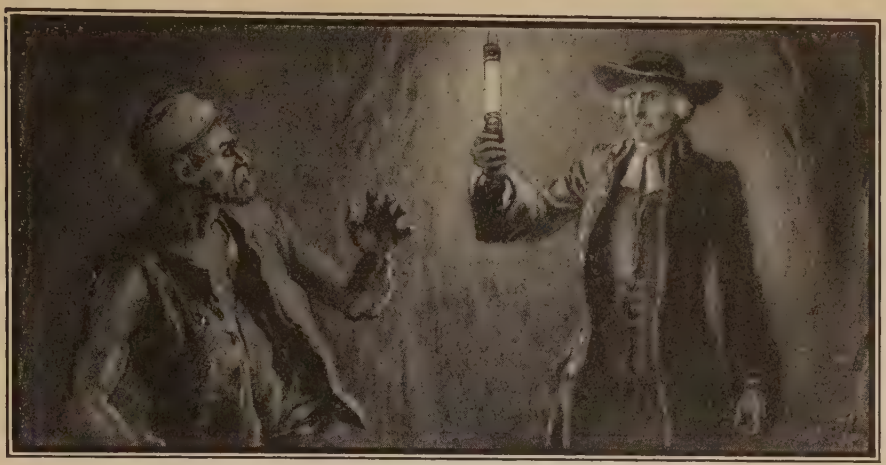
In the water the animal most feared by man is the shark, but there is a fresh-water creature much more terrible than the shark, and that is the crocodile, which, when its victim struggles, swoops down upon him with a rush, and seizes him with its frightful jaws. It is not often that an unarmed man escapes from such an encounter, but one scarred native of Northern Nigeria lives to boast of a victory over a crocodile. He was an Englishman's servant, and one night fell overboard from a boat into the river.

There was a frantic struggle. The crocodile was hungry and fierce, but the native saved himself by remembering an old lesson. He groped for the eyes of the crocodile, and managed to thrust his thumbs into them. The crocodile instantly let go, and the man then dragged himself ashore. He was found in the morning, and taken to a hospital. After he was cured the brave man traveled in search of his master, found him, and re-entered his service. He took with him a precious trophy, six teeth of the crocodile, which had broken off in the struggle, and become fixed in his scalp.

WHAT HAPPENED TO THE EARLY MEN

Struggles of this kind still happen from time to time in various parts of the world which civilization has not yet conquered. They give us an idea of what must have happened in the days when the first men fought with beasts for a place upon the earth. The nature of wild beasts has not changed, nor has their strength weakened. Man is lord of earth only by the power of his brain, which has enabled him to make weapons more deadly than the brute force with which he is still compelled at times to do battle.

CONTINUED ON PAGE 5883.



HOW THE MINER GOT HIS LAMP

CONTINUED FROM 5726

ONE of the most important journeys ever made by man was undertaken on January 9, 1816, by John Hodgson, the rector of a parish near Newcastle, in England. It was he who first carried a safety lamp into a coal-mine.

Before that day many miners had worked in the darkness of the pits with only a revolving disk of steel spluttering sparks from a flint at the edge. The black air of some mines is filled with gas, which will flame at the touch of a light, and burst with a terrible explosion. Therefore the miners worked with only the sparks of the steel disk to give them the smallest sense of light.

It chanced one day that Sir Humphry Davy, a famous man of science, of whom we read in The Story of Men and Women, was staying with friends in Northumberland. Some people there, including Mr. Hodgson, asked him if he could not invent something to prevent mine explosions. They described the horrors of fire-damp, as the worst of the mine gases is called, and told of the awful explosions which are like lightning and earthquake combined. Sir Humphry thought over the matter, and began to make experiments. He discovered a wonderful thing—*flame will not pass through minute tubes*. He put on his thinking-cap—if it was ever off his head!—and came to the conclusion that wire gauze is only a series of little tubes placed side by side. He constructed a cylinder of this wire gauze, and put a flame inside. Light came through the holes, but not flame. And yet, how absurd! Cannot the gas come through those holes and touch the dangerous flame? Yes, indeed; but it cannot get out again *as flame*. That was the discovery.

He sent to Mr. Hodgson for "a bottle of fire-damp" out of the mines, and tried it on his wire-gauze invention. No explosion took place. He then gave orders for a rough safety-lamp to be made.

This was the lamp that Mr. Hodgson bravely carried into Hebburn Pit on January 9, 1816.

On went the clergyman with his flaming lamp, more wonderful than Aladdin's, penetrating farther and farther into the mine. In the distance a lonely miner was swinging his pick by the dim light of a steel-

mill. *"Put out that light!"* he shouted, in tones of horror.

That was the miner's welcome of the Davy lamp. Put out that light!

To the poor fellow's utter amazement, the lamp advanced. With terrible oaths he called out that the madman, the fool, the monster carrying it should stop! Still the lamp advanced. Oaths and curses turned to agonized entreaties; the miner cried out with all his soul that the lamp should be put out.

Then his prayers ceased. The mystery of this advancing light, passing so quietly and so safely through the mine, was like something from another world. In breathless silence he waited, as, without a word, the man who held the lamp came solemnly, steadily on. At last he was close to the miner.

The lamp illuminated the face of someone he knew—John Hodgson, the clergyman, the friend of many a poor miner in that black country. The miner could hardly speak. He saw this man holding up in the pit a lamp that shone in the midst of danger, and yet there was no explosion; and he readily forgave the clergyman for frightening him. When Sir Humphry learned of this triumphant success, he was elated. A friend urged him to take out a patent. "It will bring you in £10,000 a year," said he. But Davy would have none of this. He did not want to receive money for saving life.

WHO FIRST ATTEMPTED TO MAKE A FLYING MACHINE?

We do not know who first tried to fly. There is a tradition that an English monk made an attempt in Spain even before the time of the Norman Conquest. Bacon, the friar philosopher, and a Saxon bishop who lived a hundred years later than Roger Bacon, both had ideas that with a better knowledge of science might have led to the invention of a balloon, and Leonardo da Vinci, the great artist, made plans for some sort of a flying machine. It was not, however, until the seventeenth century that a real attempt to travel through the air was made.

A sheep, a cock, and a duck were the first creatures to ascend from the earth in a flying machine. Before man dared venture into the unknown region of the upper air, he sent these three creatures before him, just as Noah loosed the dove from the ark.

The sheep, the cock, and the duck were sent up in a balloon on June 5, 1783, by two young Frenchmen named Montgolfier, the sons of a paper manufacturer.



A BALLOON ASCENT WITH ANIMALS

The balloon rose from Paris, reached a height of 1,500 feet, and then fell gradually through the air till it reached the earth.

In the same year, on November 21, man himself made his first voyage of the air. Pilâtre de Rozier, a young naturalist, and the Marquis d'Arlandes, a major of infantry, were the first human beings to fly in the upper air. They ascended in a free balloon at two o'clock in the afternoon, before a concourse of people. As the strange contrivance rose with a steady and majestic pace, "wonder, mingled with anxiety, was depicted in every countenance; but when from their lofty station in the sky the navigators calmly waved their hats and saluted the spectators, a shout of delight burst forth on all sides." This first flight by man is said to have been 3,000 feet. The two aeronauts remained twenty-five minutes above the earth.

In the same year came a balloon filled with hydrogen, the invention of a Frenchman named Charles. Early in 1785 the first crossing of the English Channel was made by a Frenchman named Blanchard and an American named Jeffries. Another Frenchman named Tetsu has left us an interesting account of an ascent in June, 1786, when he rose to a height of 3,000 feet, and sailed over the country. De-

scending to a field for stones as ballast, the car was seized by a farmer and peasants and dragged towards the village. But M. Tetsu suddenly cut the cord held by these peasants, and up shot the balloon. In his ascent he encountered a terrible storm. "The lightnings flashed on all sides, and cloud-claps were incessant, and snow and sleet fell all around him. In this most tremendous situation the intrepid adventurer remained the space of three hours." He passed the night with the stars, saw the sun rise, and descended sixty-three miles from Paris.

WHAT DOES AFFORESTATION MEAN?

This is a long word, but, after all, it is only made from the word forest, which we know very well, and it means making forests. There are many trees growing which no man planted, but since men in the past and to-day cut down many trees for the sake of their wood, or because they want the land for some other purpose, it is very important that new trees should be planted. It would be a very good rule for the future that two saplings should be planted for every tree cut down.

The civilized nations, including ourselves, have been very careless about this in the past, and if we went on as we have been doing, there would soon be a timber famine, especially as the demand for paper made from wood is increasing every year. But no individual man can make money by planting trees, for they take a long time to grow. Therefore, afforestation is a work which the nation should undertake. That is already being done very much in Germany, where many thousands of men are always employed upon the State forests, caring for them and extending them. In France also great care is taken to maintain the forests. This is one of the things which we are beginning to do in this country before it is too late.

WHY DO WE THINK WE HAVE SEEN SOMETHING BEFORE, WHEN WE HAVE NOT?

This is a strange thing about the mind which has often been commented on, and various explanations have been given. As usually happens, when anything has to be explained, different people tend to give the explanations which best agree with what they themselves believe on other matters. Now, there are people who believe that each of us have lived many lives before. They suppose that when we die our souls pass into new bodies, and that so we go on from age to age. Such people will answer our question by saying that, though we have never seen the thing before in our present lives, yet we have seen it in some previous state of existence, and the soul remembers.

A much better explanation, which may or may not be correct, depends upon the fact that the brain is made of two halves which are very like each other. Indeed, it is not at all far from the truth to say that, in a way, each of us has two brains. These two parts of our brain, right and left, are connected by a vast number of nerves which run across from side to side between them.

It is quite likely that the two halves of the brain do not always work exactly in step, so to speak. Probably they do so as a rule, but sometimes one may lag a little behind the other. In such a case we might imagine that when the lagging half of the brain saw for itself what had already been seen by the quicker half, the mind, as a whole, might become confused, and wonder whether it had not found itself in the same place before. This explanation must not be accepted as true, because it is only a guess, but it may be a guess that has, at any rate, a basis of truth.

WHEN WE DREAM WE ARE FALLING SHOULD WE FALL IF WE WERE NOT IN BED?

This is not an easy question to answer. We can scarcely have bad dreams unless we are asleep, and as we cannot stand if we are asleep, there would be no farther to fall in any case, whether or not we were in bed. Yet all these questions about dreams and nightmares deserve close study.

So far as we yet understand a case like this, the waking is due to the start, and the start is due to some order that has suddenly been given to the muscles. The sudden muscular twitch wakes us in its own very unpleasant way. The order was sent to the muscles in an attempt to right the balance of the body, which the mistaken brain thought to be in danger.

So far so good, but now, why did the brain have the notion that we were falling when, in point of fact, we were lying safely in bed? The answer seems to be that our idea of the position of our bodies

largely depends upon messages sent up to the brain from the inside of the body, and not least from the neighbourhood of the stomach. But, when the stomach is out of order, wrong and misleading and unpleasant messages are sent, which the brain, when the judgment is asleep, interprets as meaning that we are falling. The moral is that people who have such nightmares should be very careful about what they eat immediately before going to bed.

CAN A DOG REASON?

The boy who asks this question has doubtless, when passing along the street some day, had his attention arrested by seeing a dog stand at a street corner as if considering which way to go, and then go up one street and suddenly turn back and go up another, and he wonders if this means that the dog is "making up its mind."

Well, there is some evidence which proves to us that dogs can reason up to a certain point, and we are bound to call them intelligent, and more than instinctive animals. But the case referred to when this question was asked by no means proves that dogs are able to reason.

In order to explain such a case as this we must remember that dogs possess one very important sense, the sense of smell, which is so feeble in ourselves that we can scarcely realize the part it plays in a dog's life. When the dog goes a little way up one street, after seeming to consider, and then turns back, it does look as if he had been reasoning and had decided that, after all, the other street was best. We can see no reason why he should change his mind. But the truth is that we can *smell* no reason why he should change his mind, and so it looks as if he had been guided not by anything outside, but by his own arguments.

The dog's world is mainly a smell world. What happened in this case was that the dog's brain, at the parting of the ways, was uncertain as to the direction of a scent the dog liked, or as to the nicer of two scents, and when the dog turned back it probably was because, on further smelling, the scent up the street he had chosen disappointed him. We live mainly in a seeing world, and our deeds must often be just as puzzling to a dog as his deeds are to us.

WHAT MAKES THE HALO ROUND THE MOON?

When we look at the moon and see what appears to be a beautiful halo all round it, we are naturally prone to suppose that the halo is really round the moon. But that is very far from the case. The halo is really nowhere near the moon at all. If it were, no doubt we should expect to see it round the moon always, but instead of that we see it only at times, and in certain states of our air. Also we notice that certain kinds of weather are apt to go with halos round the moon, a fact which plainly shows that the halos are made by something in our air, which is practically as far from the moon as we are ourselves.

There must be something in our air which bends the rays of light in a regular way, so as to form a circle, sometimes larger and sometimes smaller, round the image of the moon that we see. This is done by water in one form or another, sometimes, it is supposed, by raindrops, sometimes by frozen water existing in the form of ice-crystals.

WHY DO FLOWERS DIE SO SOON?

We are prone to think of flowers as the whole plant, but that is a mistake. The flower is the most beautiful part of a plant, and the part easiest to see; but it is only part of the plant, made for the special purpose of producing seeds from which new plants will grow. The process of preparing seeds has been going on long before the flower opens; then, when it does open, it gives the signal, by its beauty or its scent.

Insects promptly visit it, and by carrying to the flower some yellow pollen, which they have got from another flower of the same kind, they make the seed quite ready to grow into a new plant. When this is done, the petals of the flower, which are the beautiful part we see, have no more use; they drop off, and we say that the flower is dead. But this is not death; it is part of the processes of the life of the plant that are going on from generation to generation.

DOES THE SUN KEEP STILL?

No. We have perfect proof that the sun moves in two different kinds of ways at least, if not more. For one thing, the sun spins upon itself. This we know because we can watch sunspots appearing

on one side of the sun, traveling across its face, disappearing, and then coming back again after an interval of days.

The sun spins in the same direction as the earth spins, and in the same direction as that in which the earth revolves round the sun. Secondly—and this is far more astonishing and tremendous—we can prove by watching the positions of the stars that the sun is moving through space, and all his family, of course, including ourselves, must be moving with him.

There is a glorious bright star, Vega, one of the whitest and most splendid stars in the sky, which is said to represent about the point toward which the sun and his family are at present moving. The rate of that movement is believed to be about twelve miles a second.

Is it possible that monkeys will ever become men?

There is no great future for the race of monkeys, simply because they are so far behind to-day that they have lost the race for ever. Thousands and thousands of years have passed since man became master of the world once and for all. All other creatures are more and more coming under his will, wisely and unwisely. There are four kinds of monkeys that form a special group of their own, and are called man-like.

Two of these exist in the Congo forest, and will probably soon become extinct; the other two live in Malaysia, and their fate, though probably not quite so near at hand, will doubtless be the same.

Can insects communicate with each other?

Insects are, perhaps, the most wonderful talkers in the animal world. They make us realize that communication does not depend upon tongue and lips and voice alone. They talk with their feelers, or antennæ, as they are called. There is no doubt about it.

If the bees in a hive lose their queen, they do not all immediately discover it. The saddening fact becomes known at first only to a few. But these meet others, whose antennæ they touch with their own, and so tell the direful story. These communicate the news to others, and so the news is spread. Soon the hive is in an uproar.

Very much the same sort of language must be employed by the ants. All their words are spoken by means of their feelers. No one who has watched them at work can doubt that the wonderful cities of the bees and ants are regulated by strict discipline.

To see whether the habits of ants of communicating news was to be observed when they were in a state of captivity, Huber, the great naturalist, placed a large number of them in a closed and darkened chamber. At first the ants scattered in much disorder. By-and-by an ant discovered a way out of the darkened chamber. He returned to his companions and touched several of them with his antennæ. Soon all the ants assembled in lines, and marched out with one impulse, the desire for liberty being thus communicated.

Do birds talk to one another?

There can be little doubt that birds have an extensive language, but not all of it that we hear is important; some birds chatter for the love of hearing themselves, and we are all glad that they do. But they have their important talks, and we know positively that it is serious language which they use. Men who devote the greater part of their leisure to the study of birds and their calls can deceive birds by imitating those calls. Men find out that certain calls are followed by certain results, so, hiding themselves on the shore or in the fens, they utter these cries, and birds, wild and nervous as only wild birds can be, will drop from the clouds to answer the call, which they imagine to be made by some bird of their own species. Fowls afford a good opportunity of studying bird language.

We may note the language of the hen when she has laid an egg; when she warns her chickens of danger; when she calls them to rest under her wings; when she calls them to food.

Do ants catch slaves as men used to do?

There is not the slightest doubt that ants do catch slaves, and that they hunt for slaves in parties.

When the slave-making ants desire to plunder some prosperous home of the ants called Formica fusca, they do not all wander off, aimlessly searching. No; for weeks they have properly organized parties of scouts and spies going out every day, searching the country far and near. These scouts return at night

and present their reports; for the general mass of the ants never go out until the spies bring news of nests to be plundered.

When such a nest has been discovered, the slave-hunters sally forth in a body to rob it. Generally the march to the nest is well ordered, but in the rush for plunder some confusion may arise.

Then groups of the party of slave-hunters will lose their way. As soon as this happens, scouts will be sent out by the lost ones. The whole party of the latter will remain perfectly still until the scouts have scented out the trail. These scouts return to their friends, and tell them the news. Then they set forth again on the trail, and march on to the nest to join in stealing the infants of the nests, whose home is thus broken up.

IF WE CAN LIFT THINGS, ARE WE STRONGER THAN THE PULL OF THE EARTH?

If we can lift a thing, certainly we are stronger than the pull of the earth *for that thing;* and when we cannot lift a thing, it is because we are less strong than the pull of the earth for that thing.

The force of gravitation depends in an absolutely regular way upon the amount of matter in question. A small stone is pulled upon by the earth to a certain extent with a certain force, which is not very great, though the earth is large. For though the earth is large the stone is small, and the force of gravitation depends upon the size of the two things in question. But if the stone be a great rock, then the force of gravitation is proportionately greater, and we cannot lift it.

WHY DOES A KITE KEEP STILL AT A GREAT HEIGHT?

As you read this you may be looking out across a sea-bay. Here and there along the coast you may see the water being disturbed in small patches by the gusts of wind blowing off the shore.

Farther out to sea the water is all in the same state, not patchy. This means that the wind near the shore is blowing in little bits at a time, and if you were in a small boat you would feel it quite strong at one moment and not at all a few yards farther on. If you were flying a kite close to the ground, it would dive unsteadily in these small gusts, but far out at sea it would fly quite steadily. So it would if it got high up in the air.

The reason is that the surface of the ground is very uneven, broken up by hills and valleys and trees and houses and bays and promontories, round all of which the gusts blow at intervals. This is why boating is dangerous on lakes, and in similar places; and the same thing accounts for some of the accidents which happen to airships.

WHAT IS THE SMALLEST DISTANCE WE CAN MEASURE?

The ordinary way of measuring any distance is by what we may call mechanical means the same in principle, though vastly more delicate, as measuring by means of a footrule. The best possible that can be attained in this way is to measure to about one twenty-five thousandth part of an inch. This particular distance is much used in science, and has the Greek name of a "mikron." It is the thousandth part of a millimetre in the metric system.

But it is now possible to measure distances in a wholly different way by means of light. Light consists of waves of known lengths, and this fact can be used for the measurement of very minute distances. In its delicacy this method far surpasses anything that can be approached by mechanical means, and the unit of distance which can be measured by means of ordinary red light is actually not more than one eight-millionth part of an inch.

WHY IS IT IMPOSSIBLE TO SINK IN THE DEAD SEA?

We can sink only in water which is less dense than our bodies. Fresh water is less dense than sea-water, and that is why it is easier to float in sea-water. The water of the Dead Sea and of the Great Salt Lake in Utah, contain so much salt that it is denser than our bodies, and so they will not sink in them. People who visit them often bathe in them as an experiment.

One writer says that a bath in the Dead Sea is "both pleasant and refreshing"; but Sir Francis Galton, the famous traveler and man of science, actually made the experiment himself, and this is what he says: "I tasted and foolishly bathed in the nasty, sticky, dense water of the bituminous Dead Sea, which stuck in my hair for the day."

There seem to be three reasons which account for the extreme saltness of the Dead Sea, which has actually more than one part of salt to three of water. The

first is that much of the water which runs into the lake has run over the salt range of Sodom, and thus carries in large quantities of salt. Then there is a large number of salt springs which run into the Dead Sea at various points along its shores. And, lastly, there is evaporation of the water of the Dead Sea, which flies away into the air, leaving behind the salt which it brought in.

WHY CANNOT FISH LIVE IN THE DEAD SEA?

The Dead Sea was first so named by the great writer, Jerome, because no form of animal life is found in it. This can readily be explained when we study the composition of the water. It would, in the first place, be difficult or impossible for a fish to keep under water—which is as necessary for it as it is for us to keep above water—in the Dead Sea, so dense is the water owing to the salt. And, in the second place, the salts found in the water include some which are powerfully antiseptic, or fatal to life, particularly the lower forms. There is actually in it three per cent of the salt called calcium chloride, which is very poisonous to all forms of life. More than half the salt of the Dead Sea consists of magnesium chloride, and its composition is thus very different indeed from that of ordinary sea-water.

ARE THE STRONGEST NATIONS THE HAPPIEST?

One is always inclined to believe that the nation is best off which has the greatest army and navy and the greatest material power.

But it is by no means so certain that the citizens of Switzerland and Holland and Sweden are less happy and to be envied than those of the "Great Powers," as they are called. When we come to look at the facts fairly, we find that a little nation may be just as prosperous as a big one, its citizens less burdened, its children better cared for, its laws more just and humane and progressive.

It is among the Great Powers, like Russia and Austria and England, that we find a very high death-rate among babies, and it is in small countries, like Norway and Sweden and Switzerland, that we find the figure lowest. We also find that the amount of trade done by the small and weak nations is often higher, when reckoned for each person, than that done by the strong nations.

WHY SHOULD WE HAVE STATE FLOWERS OR NATIONAL FLOWERS?

There is no reason why we should have a state flower or a national flower unless it means something to us, but it usually means a great deal. You remember in Hamlet, Shakespeare makes poor Ophelia say, "There's rosemary, that's for remembrance." All flowers are for remembrance, and we want national flowers to help us to remember.

The flag is a high and holy symbol. It teaches us to remember the might and majesty and the honor of the nation; its loyalty to justice and truth, and the purity of its great ideals. But after all, just as every nation is made up of individuals and families, for each one of us, our country centres round his home. The flower that grows beside the doorstep, by the spring, down in the orchard, or in the field beyond the wood, speaks to us of that home. When you grow older you will realize how a flower, or even a whiff of its odor as you pass it by, brings back to you some scene of your childhood days; perhaps to some flower-scented day in summer when you proudly stood up, saluted the flag and vowed allegiance, which meant of course that you would do nothing in all your life that would bring dishonor on your country's name.

So we say flowers are for remembrance, and the state or national flower is to keep us in remembrance of our homes and our country.

The oldest of the national flowers is the violet, which was adopted by the city of Athens in the days of its glory. Then comes the shamrock of Ireland, though the leaf and not the flower in this case is the national emblem chosen. Most of us know the story of how, when his pagan listeners could not understand the Christian doctrine of the Trinity, St. Patrick picked a spray of the shamrock which bloomed on the ground at his feet. "Do you not see," he said, "in this wild flower, how three leaves are united on one stalk, and will you not then believe what I tell you, that there are indeed three Persons, and yet one God?" On St. David's Day in the year 640, when the Angles and Saxons were still strangers in England, the Britons of Wales, with Caedwalla as their leader, sought to drive the invader away from the rocky fastnesses where they had taken refuge. To distinguish him from

the foe, each man in the Welsh army plucked a leek and placed it in his cap. The Welshmen were victorious, and from that day on the leek has been the national emblem of Wales.

The story of the Scotch emblem is something the same. The Danes, who invaded Scotland in the eleventh century, sought to take a fortress by surprise and removed their shoes to swim across the moat at night. In the darkness they plunged into the moat, to find that it was full of thistles instead of water. Their cries of pain warned the garrison and the attack was repulsed. Scotland was saved, and in remembrance of the victory the purple thistle flower was adopted as the national flower. The rose of England brings us back to the Wars of the Roses, when the Yorkists wore a white rose and the Lancastrians a red rose as a badge. Henry VIII, a Lancastrian, married a daughter of the House of York, and made a red and white rose the badge of England. Louis VII of France took the white fleur-de-lis, probably the white iris, for his badge, when he went to the Holy Land on a crusade, as a symbol of the purity of his motives. Since that time the lily has been looked upon as the emblem of France. Before the tricolor became the flag of France, the white lilies on a blue ground led the French armies forward to many a glorious field of battle. The blue cornflower reminds the German people of Queen Louise, the brave and gentle Queen of Prussia, who, when she fled to the fields to escape being taken prisoner by Napoleon in Berlin, amused her children by weaving wreaths for them of this pretty flower.

The maple tree has always had a peculiar place in the affections of the Canadian people, and early in the history of the country, the maple leaf was adopted as a national emblem. Canadian children sang of it joyously; now they sing of it proudly, and no Canadian can ever forget the traditions made by the men who wore it on the fields of France and Flanders.

The United States has not yet adopted a flower, but most of the states in the Union have done so, and we give you a list of all:

Alabama	No choice
Arizona	Giant Cactus
Arkansas	Apple Blossom
California	Golden Poppy
Colorado	Blue Columbine
Connecticut	Mountain Laurel
Delaware	Peach Blossom
District of Columbia	No choice
Florida	Orange Blossom
Georgia	Cherokee Rose
Idaho	Syringa
Illinois	Violet
Indiana	Carnation
Iowa	Wild Rose
Kansas	Sunflower
Kentucky	Trumpet Vine
Louisiana	Magnolia
Maine	Pine Cone and Tassel
Maryland	No choice
Massachusetts	Mayflower
Michigan	Apple Blossom
Minnesota	Moccasin Flower
Mississippi	Magnolia
Missouri	No choice
Montana	Bitter Root
Nebraska	Golden Rod
Nevada	Sagebrush
New Hampshire	No choice
New Jersey	No choice
New Mexico	Cactus
New York	Rose
North Carolina	Daisy
North Dakota	Wild Prairie Rose
Ohio	Scarlet Carnation
Oklahoma	Mistletoe
Oregon	Oregon Grape
Pennsylvania	No choice
Rhode Island	Violet
South Carolina	No choice
South Dakota	Pasque Flower
Tennessee	No choice
Texas	Bluebonnet
Utah	Sego Lily
Vermont	Red Clover
Virginia	No choice
Washington	Rhododendron
West Virginia	Rhododendron
Wisconsin	Violet
Wyoming	Indian Paintbrush

Many of these state flowers have been chosen by the school children, but in a number of cases the state legislature has dignified the use of the flower by making it the subject of a law. When a flower is adopted by the United States, as a nation, it will probably be the goldenrod, which blooms bravely and freely from sea to sea, and from the north of the country to the south.

THE NEXT QUESTIONS ARE ON PAGE 5871.

POLITICAL AND NATIONAL SONGS

MUSIC and song are the expression of emotion and feeling and nowhere is this more apparent than in the history of the patriotic songs of different peoples. A nation is not obliged to have a national song, as it is to have a settled form of government and laws for the state. But in some crisis of national life a song arises which embodies the sentiments of the hour and, because it satisfies this need for expression of a whole people, it endures, and in time becomes a national hymn. Sometimes it is the music which possesses popular fancy; sometimes it is the words. In other parts of our book you will find much British, French and Canadian patriotic poetry. We have given place in this section to countries not so well represented, including the National Songs of the United States. The history of "The Star-Spangled Banner" is on page 5491.

The National Songs of Austria, Holland, Denmark, Italy, Finland, Norway, Roumania and Sweden, included in this section, are taken from "Airs of All Lands," by John Philip Sousa, by permission of Carl Fischer, publisher.

THE STAR-SPANGLED BANNER

CONTINUED FROM 5733

O! SAY, can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming—
Whose broad stripes and bright stars, through the clouds of the fight,
O'er the ramparts we watched were so gallantly streaming?
And the rocket's red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there;
O! say, does that star-spangled banner yet wave
O'er the land of the free, and the home of the brave?

On that shore dimly seen through the mists of the deep,
Where the foe's haughty host in dread silence reposes,
What is that which the breeze, o'er the towering steep,
As it fitfully blows, now conceals, now discloses?
Now it catches the gleam of the morning's first beam,
In full glory reflected now shines on the stream;
'Tis the star-spangled banner; O! long may it wave,
O'er the land of the free, and the home of the brave!

And where is that band who so vauntingly swore
That the havoc of war and the battle's confusion
A home and a country should leave us no more?
Their blood has washed out their foul footsteps' pollution.
No refuge could save the hireling and slave
From the terror of flight, or the gloom of the grave;
And the star-spangled banner in triumph doth wave
O'er the land of the free and the home of the brave.

O! thus be it ever, when freemen shall stand
Between their loved homes and war's desolation!
Blest with victory and peace, may the Heav'n-rescued land
Praise the power that hath made and preserved us a nation.
Then conquer we must, for our cause it is just,
And this be our motto — "In God is our trust;"
And the star-spangled banner in triumph shall wave,
O'er the land of the free, and the home of the brave.

COLUMBIA, THE GEM OF THE OCEAN

Although Christopher Columbus discovered the West Indies, and never set foot upon the mainland of America (see page 64), it was at first proposed to call this new land "Columbia." Some of the patriotic songs refer to the country by this name. This song was written by Thomas à Becket in 1843, and "Hail Columbia" by Joseph Hopkinson, a young lawyer, in 1798. It was suggested by David T. Shaw.

OH, Columbia, the gem of the ocean,
The home of the brave and the free,
The shrine of each patriot's devotion,
A world offers homage to thee,
Thy mandates make heroes assemble,
When Liberty's form stands in view;
Thy banners make tyranny tremble,
When borne by the red, white and blue,
Thy banners make tyranny tremble,
When borne by the red, white and blue.

When war wing'd its wide desolation,
And threaten'd the land to deform,
The ark then of Freedom's foundation,
Columbia, rode safe thro' the storm:
With the garlands of vict'ry around her,
When so proudly she bore her brave crew,
With her flag proudly floating before her,
The boast of the red, white and blue,
With her flag proudly floating before her,
The boast of the red, white and blue.

The star-spangled banner bring hither,
O'er Columbia's true sons let it wave;
May the wreaths they have won never wither,
Nor its stars cease to shine on the brave.
May the service united ne'er sever,
But hold to their colors true;
The army and navy forever,
Three cheers for the red, white and blue,
The army and navy forever,
Three cheers for the red, white and blue.

YANKEE DOODLE

"Yankee Doodle" has been called "the nursery rhyme of the American Army." It is difficult to account for its popularity, but it cheered the ragged soldiers of the Revolution, and has lived in spite of all efforts to replace it with words more appropriate.

FATHER and I went down to camp,
Along with Captain Good'in,
And there we saw the men and boys,
As thick as hasty puddin'.

CHORUS:
Yankee Doodle, keep it up,
Yankee Doodle dandy,
Mind the music and the step,
And with the girls be handy.

And there we see a thousand men,
As rich as Squire David;
And what they wasted ev'ry day,
I wish it could be saved.

The 'lasses they eat ev'ry day,
Would keep a house a winter;
They have so much that, I'll be bound,
They eat it when they've mind to.

And there I see a swamping gun,
Large as a log of maple,
Upon a mighty little cart;
A load for father's cattle.

The troopers, they would gallop up,
And fire right in our faces;
It scared me almost half to death
To see them run such races.

It scared me so I hoofed it off,
Nor stopped, as I remember,
Nor turned about till I got home,
Locked up in mother's chamber.

DIXIE

There are many versions of "Dixie," usually absolute nonsense, but this particular one shows how intensely Southerners felt at the time of the Civil War. Happily all are now welded together as one country, united in loyalty and devotion to the nation.

SOUTHRONS, hear your country call you!
Up, lest worse than death befall you!
To arms! To arms! To arms, in Dixie!
Lo! all the beacon-fires are lighted,—
Let all hearts be now united!
To arms! To arms! To arms, in Dixie!
Advance the flag of Dixie!
Hurrah! hurrah!
For Dixie's land we take our stand,
And live or die for Dixie!

To arms! To arms!
And conquer peace for Dixie!
To arms! To arms!
And conquer peace for Dixie!

Hear the Northern thunders mutter!
Northern flags in South winds flutter!
Send them back your fierce defiance!
Stamp upon the accursed alliance!

Fear no danger! Shun no labor!
Lift up rifle, pike and sabre!
Shoulder pressing close to shoulder,
Let the odds make each heart bolder!

How the South's great heart rejoices
At your cannons' ringing voices!
For faith betrayed, and pledges broken,
Wrongs inflicted, insults spoken.

Strong as lions, swift as eagles,
Back to their kennels hunt these beagles!
Cut the unequal bonds asunder!
Let them hence each other plunder!

Swear upon your country's altar
Never to submit or falter,
Till the spoilers are defeated,
Till the Lord's work is completed.

Halt not till our Federation
Secures among earth's powers its station!
Then at peace, and crowned with glory,
Hear your children tell the story!

If the loved ones weep in sadness,
Victory soon shall bring them gladness,—
To arms! To arms! To arms, in Dixie!
Exultant pride soon banish sorrow,
Smiles chase tears away to-morrow.
To arms! To arms! To arms, in Dixie!
Advance the flag of Dixie!
Hurrah! hurrah!
For Dixie's land we take our stand,
And live or die for Dixie!

To arms! To arms!
And conquer peace for Dixie!
To arms! To arms!
And conquer peace for Dixie!

MY COUNTRY, 'TIS OF THEE

This song, written in 1832, by an American Baptist clergyman named Samuel Francis Smith, has long been regarded as the national hymn of the American people, breathing, as it does, the spirit of liberty which the government of the country offers to its citizens and to the thousands from other lands.

MY country, 'tis of thee,
Sweet land of liberty,
Of thee I sing;
Land where my fathers died,
Land of the pilgrim's pride,
From every mountain side
Let freedom ring.

My native country, thee—
Land of the noble free—
Thy name I love;
I love thy rocks and rills,
Thy woods and templed hills;
My heart with rapture thrills
Like that above.

Let music swell the breeze,
And ring from all the trees
Sweet freedom's song:
Let mortal tongues awake;
Let all that breathe partake;
Let rocks their silence break—
The sound prolong.

Our fathers' God, to thee,
Author of liberty,
To Thee we sing:
Long may our land be bright
With freedom's holy light,
Protect us by Thy might,
Great God, our King.

BATTLE-HYMN OF THE REPUBLIC

Mrs. Julia Ward Howe, who, in her ninety-second year, died in 1910, may be described as one of the most eminent women of America. She won fame both as a writer and a speaker, and wrote many books, but will be remembered chiefly for this celebrated poem, written in the early days of the American Civil War, to encourage the soldiers of the North in fighting for the preservation of the Union.

MINE eyes have seen the glory of the coming of the Lord:
He is tramping out the vintage where the grapes of wrath are stored;
He hath loosed the fateful lightning of His terrible swift sword:
His truth is marching on.

I have seen Him in the watch-fires of a hundred circling camps;
They have builded Him an altar in the evening dews and damps;
I can read His righteous sentence by the dim and flaring lamps;
His day is marching on.

I have read a fiery gospel writ in burnish'd rows of steel:
"As ye deal with my contemners, so with you My grace shall deal;
Let the Hero, born of woman, crush the serpent with His heel,
Since God is marching on."

He hath sounded forth the trumpet that shall never call retreat;
He is sifting out the hearts of men before His judgment-seat:
Oh, be swift, my soul, to answer Him! Be jubilant, my feet!
Our God is marching on.

In the beauty of the lilies Christ was born across the sea,
With a glory in His bosom that transfigures you and me:
As He died to make men holy, let us die to make men free,
While God is marching on.

AMERICA, THE BEAUTIFUL

This very beautiful hymn, written by Katherine Lee Bates, expresses the vision which all high-hearted men have dreamed. The first verse is unequaled in the picture which it presents in four lines.

O BEAUTIFUL for spacious skies,
For amber waves of grain,
For purple mountain majesties
Above the fruited plain!
America! America!
God shed his grace on thee,
And crown thy good with brotherhood
From sea to shining sea!

O beautiful for pilgrim feet,
Whose stern, impassioned stress
A thoroughfare for freedom beat
Across the wilderness!
America! America!
God mend thine every flaw,
Confirm thy soul in self-control,
Thy liberty in law!

O beautiful for glorious tale
Of liberating strife,
When valiantly for man's avail,
Men lavished precious life!
America! America!
May God thy gold refine,
Till all success be nobleness,
And every gain divine!

O beautiful for patriot dream
That sees beyond the years
Thine alabaster cities gleam
Undimmed by human tears!
America! America!
God shed his grace on thee,
And crown thy good with brotherhood
From sea to shining sea!

AUSTRIA

The story runs that during his visit to London Haydn was so stirred by the strains of "God save the King" that on his return to Vienna he composed a national anthem on similar lines for his own country. This hymn was first sung in 1797.

GOD preserve our noble Emp'ror,
Franz our Emp'ror good and great!
Mighty ruler! high in wisdom,
We his glory celebrate!
Love shall twine him laurel garlands,
They become his regal state!
God preserve our noble Emp'ror,
Franz our Emp'ror good and great!

Over blooming lands his sceptre
Doth extend both wide and far;
Of his throne the noblest pillars
Righteousness and mercy are.
Over all his shield extended
Beams effulgent as a star.

To array himself in virtue,
Ever was his constant care;
Only to defend his people
Doth his sword flame high in air.
In their blessings thus rewarded,
He finds all his pleasures there.

Bonds of slavery he has broken,
He has made his people free,
He of knighthood is the flower,
Brave and good and true is he;
And when comes his latest hour,
May he by angels greeted be.

HOLLAND
WIEN NEERLANSCH

These verses were written in 1815 by the Dutch poet Hendrik Van Tollens and set to music by Smits in 1820, since when it has been the national song of the country.

LET him in whom old Dutch blood flows,
Untainted, free and strong,
Whose heart for Prince and country glows,
Now join us in our song;
Let him with us lift up his voice,
And sing in patriot band,
The song at which all hearts rejoice,
For Prince and Fatherland!

We brothers, true unto a man,
Will sing the old song yet;
Away with him who ever can
His Prince or land forget!
A human heart glow'd in him ne'er,
We turn from him our hand,
Who callous hears the song and pray'r
For Prince and Fatherland!

Preserve, O God, the dear old ground
Thou to our fathers gave;
The land where we a cradle found
And where we'll find a grave!
We call, O Lord, to Thee on high,
As near death's door we stand.
Oh! safety, blessing, is our cry,
For Prince and Fatherland.

Loud ring thro' all rejoicing here,
Our pray'r, O Lord, to Thee;
Preserve our Prince, his House, so dear
To Holland, great and free!
From youth thro' life be this our song,
Till near to death we stand!
O God, preserve our sov'reign long,
Our Prince and Fatherland.

DENMARK
KONG CHRISTIAN STOD VED HIERN MAST

The melody is of ancient origin and the author unknown. Since about 1775 it has been regarded as the national song of Denmark. The verses recall, and sing praises of, various Danish heroes.

KING CHRISTIAN stood beside the mast
In smoke and mist;
His glitt'ring sword was swinging fast,
Thro' hostile heads it swiftly pass'd,
Then sank each Gothic hulk and mast
In smoke and mist.
Fly! shouted they, for no man can
The power of Denmark's Christian
Resist!

Nils Juel heard the tempest high,
'Tis now the hour!
He raised the red flag t'ward the sky,
And smote the foe till all did cry
Aloud above the tempest high,
'Tis now the hour!
Fly! called they, who his life would save!
Of Denmark's Juel who can brave
The pow'r?

North Sea! a glimpse of Wessel brake
Thy low'ring sky!
Thy knights are fighting for thy sake,
Within the sea foes refuge take,
A cry of wild despair doth break
Thy low'ring sky!
Fly! shouted they, even warriors bold
From Denmark thunders Torkenskiold,
Then fly!

Path of the Dane to fame and pow'r,
Dark-rolling flood!
Receive the friend who ne'er did cow'r
Before grim death in danger's hour,
But braves, as thou, the tempest's pow'r,
Dark-rolling flood!
Thy wat'ry arms my graves shall be!
Receive in war and victory
My blood!

ITALY
GARIBALDI'S HYMN

Italy has two national airs: The Marche Royale and Garibaldi's War Hymn, but the March has no words. This hymn was written in 1859 by Mercantini, and the music is attributed to Olivieri.

FROM out the tomb the dead heroes are speaking,
Martyrs of old retribution are seeking,
Their swords now at rest, 'round each head shines a halo,
With Italy's motto engraved on each breast,
Come, forward all, come forward!
Rise, comrades, brave and glorious,
Unfurl the banner for we'll be victorious,
We'll give our foe the sword and likewise the dreaded fire-brand,
For we must conquer, 'tis Italy's command,
So fight with the sword,
So fight with the sword,
With fire and sword,
With fire and sword.

FINLAND
VART LAND

The words of Finland's national song are from the pen of the poet Runeberg and the music by Frederick Pacius, a pupil of Spohr. There are eleven verses, of which the first only is given here.

OUR land, our land, our Fatherland!
Thou glorious word, ring forth!
No mountain rises proud and grand,
Nor slopes a vale, nor sweeps a strand,
More dear than thou, land of the North,
Our father's native earth.

NORWAY
SONNER AF NORGE

These verses, which show a distinct leaning for democracy, were written by H. A. Bjerregaard, and were set to music by C. Blom about fifty years ago.

SONS of dear Norway, O proud and ancient kingdom,
Sing to the harp in a jubilant song!
Proudly exult in possession of freedom,
Honor your land, to which honors belong,
Glory bestowing,
Patriots showing,
How to be worthy the fatherland dear,
Throbbing our hearts and our faces glowing,
Singing of freedom in melody clear.

Land of great mountains, snow-peaked, cloud-capped and rugged,
Vales rich and fertile and seas filled with fish!
Now and for all time, thy people love thee dearly,
Would die for thy sake, if 'tis thy royal wish.
Dearest of mothers,
We stand as brothers,
Pledged to defend thee for liberty's sake,
Grow, grand old nation, surpassing all others,
Until the waves on thy shores cease to break.

BELGIUM
LA BRABANÇONNE

This song appeared in 1830, during the war between Belgium and Holland, when the Belgians wanted to be released from Dutch rule. The verses were written by Jenneval, and set to music by Francois Van Campenhout. This is a recent translation.

LONG years of bondage having ended,
The Belgian, rising from his shame,
Regains at last by courage splendid
His flag, his rights and ancient name.
And thy hand, supreme and glorious,
That nations of the earth may see,
Shall write on thy flag victorious
"The King, the Law, and Liberty!"

March on then with shoulder to shoulder;
March on then from progress to progress,
God sees thy courage growing bolder
And smiles at thy virile success.
Let us work! May our efforts render
To our fields due fertility;
And let the arts crown with their splendor
The King, the Law and Liberty.

Let us open our ranks, forgetting
Old feuds with foemen we have known;
Ere our Life's sun sinks to its setting
All Dutchmen as brothers we'll own.
Let us hold out the hand in greeting,
And may truth and fraternity
Inspire our song while Time is fleeting:
"The King, the Law and Liberty."

Oh, Belgium, Mother, may we ever
Devote our heart and arms to thee;
God grant thy future sons may never
Forget thee in the days to be.
Thou shalt live ever great and splendid,
In bonds of lasting unity.
And thy watchword till Time be ended,
"The King, the Law, and Liberty!"

ROUMANIA
TRACASCA REGELE

In 1861 the government of Roumania offered a prize for the best national hymn. This is the hymn which won the prize, and was adopted by the Roumanian army, January 22, 1862.

LONG live the King in peace,
Long may his pow'r increase,
Long may he reign o'er us,
Shout we loud the chorus.
Ruler grand, thy glorius land
Predicts success for thee,
Evermore, in peace or war,
Great King triumphant be.
Oh, Holy Land, Heavenly Father,
Uphold, with thy mighty hand,
The crown and land of Roumania.

SWEDEN
UR SVENSKA HJERTANS

Although an adaptation of the words of "God save the King" is the Swedish National Anthem, this song by the poet Strandberg has been adopted officially by the court and is sung on public occasions.

OUR Swedish feelings for our king
In voices patriotic sing,
God bless our land and king.
In cheerfulness and sweet content,
In happiness our lives are spent,
So sing with voices eloquent,
God bless our land and King!

ARMENIA
HYMN TO LIBERTY

The author of this song was a Russian Armenian, who fell under suspicion for his political opinions and suffered exile for them. Under the Empire it was forbidden to possess a picture of Nalbandian; but portraits of him, with his poem on Liberty printed around the margin, were printed secretly.

WHEN God who is forever free,
Breathed life into my earthly frame,—
From that first day, by his free will
When I a living soul became,—
A babe upon my mother's breast,
Ere power of speech was given to me,
Even then I stretched my feeble arms
Forth to embrace thee, Liberty!

RUSSIA

The Hymn of Free Russia was composed by Konstantin Balmont, in Moscow, March, 1917, during the course of the Russian Revolution. Gretchaninoff, composer of this stirring martial music, is one of Russia's best known composers to-day.

YOUNG Russia, hail, victorious!
All praise we chant to thee.
Amid the nations, glorious
Thou standest, proud and free

No tyrant shall enslave thee,
Thy sun arises bright!
All hail to those who gave thee
New Freedom's sacred light!

A song of countless voices
Resounds from shore to shore,
The Russian folk rejoices
With Freedom evermore!

SCOTLAND

WE'LL HA'E NANE BUT HIGHLAND BONNETS HERE

The first verse of this fine song by Alexander Maclagan breathes the spirit of the poem. The words of the refrain were shouted to his men by Sir Colin Campbell when charging the heights of Alma. The effect of this rallying cry is well known. The poem was dedicated to Sir Colin Campbell.

ALMA, field of heroes, hail!
Alma, glorious to the Gael!
Glorious to the symbol dear,
Glorious to the mountaineer.
Hark, hark to Campbell's battle-song!
It led the brave to victory;
It thundered through the charging cheer,
We'll ha'e nane but Highland bonnets here!
We'll ha'e nane but Highland bonnets here!
We'll ha'e nane but Highland bonnets here!
It thundered through the charging cheer,
We'll ha'e nane but Highland bonnets here!

JAPAN

The words of the Japanese national anthem are interesting, full of poetry and show that loyalty to the monarch as the representative of the whole people for which Japan is famous. The English version reads:

UNTIL this grain of sand,
Tossed by each wavelet's freak,
Grow to a cloud-girt peak
Towering above the land;
Until the dewy flake
Beading this blossom's gold
Swell to a mighty lake—
Age upon age untold
Joy to joy manifold
Add for our sovereign's sake.

PORTUGAL

PORTUGUESE NATIONAL HYMN

Portugal became a republic in 1910, and the new National Hymn was written in celebration of this great event by Henrique Lopes de Mendonca. The rather free translation preserves the spirit of the original, which breathes through the verses.

NOBLE heros of the sea,
Nation valiant and immortal,
Raise again thine ancient splendor,
Portugal!
Among the mists of memory,
O, my country, hear the voice
Of the great, illustrious dead
Who shall guide to victory.

CHORUS:

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!

Unfurl thine unconquered flag,
Living beam that lights the sky,
Europe cries to all the world
Unconquered still is Portugal!
Ocean kisses thy fair shores,
Laps thee with her loving waves,
Portugal with circling arms,
To the world new countries gives.

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!
Greet the sun whose healing power
Shines upon the future rife;
Let the echo of attack
Be the signal of new life;
Rays of this, the coming dawn
Like to mother's kisses are
To inspire and hold us brave
Against the blows of ruthless power.

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!

GERMANY

DIE WACHT AM RHEIN

This was written by Schneckenburger, in 1840, and its most popular setting was to a tune composed by Carl Wilhelm. France and Germany have had a long-continued struggle for possession of the Rhine.

WITH thunder shout the air is rent,
Like roar of waves and sword-clash blent
"Now of the German Rhine so free,
Who will the river's guardian be?"
Thou fatherland, mayst tranquil be,
Thy faithful sons will watch o'er thee,
Steadfast and true, each son of thine
Stands sentry o'er our noble Rhine!

The people hear that mighty cry,
Like lightning flashes ev'ry eye.
That landmark ev'ry heart will keep,
And watch unsleeping o'er the deep.

Thy tide reflects the heav'ns above,
And heroes gaze on thee with love,
And proudly breathe a vow to thee,
Thou, Rhine, shalt ever German be.

So long as blood flows in each vein,
Or hands to draw the sword remain,
And while an arm is in the land,
No foe shall walk upon thy strand.

The waves re-echo back the cry,
The standard in the breeze doth fly,
The Rhine, the German Rhine, so free,
Yes, we will all thy guardians be.

WALES

MARCH OF THE MEN OF HARLECH

This battle hymn is beyond question the finest specimen of martial music in the world. The name of the composer is unknown, but it was probably written during the War of the Roses, when Harlech Castle was besieged on behalf of King Edward IV, 1468-9.

MEN of Harlech! in the hollow,
Do ye hear, like rushing billow,
Wave on wave that surging follow,
Battle's distant sound?
'Tis the tramp of Saxon foemen,
Saxon spearmen, Saxon bowmen,—
Be they knights, or hinds, or yeomen,
They shall bite the ground!

Loose the folds asunder,
Flag we conquer under!
The placid sky now bright on high
Shall launch its bolts in thunder!
Onward! 'tis our country needs us.
He is bravest, he who leads us!
Honor's self now proudly heads us!
Cambria, God, and Right!

Rocky steeps and passes narrow
Flash with spear and flight of arrow
Who would think of death or sorrow?
Death is glory now!
Hurl the reeling horseman over!
Let the earth dead foemen cover!
Fate of friend, of wife, of lover
Trembles on a blow!

Strands of life are riven;
Blow for blow is given,
In deadly lock or battle shock,
And mercy shrieks to heaven!
Men of Harlech! young or hoary,
Would you win a name in story?
Strike for home, for life, for glory!
Cambria, God, and Right!

SERVIA

Neither the author nor the composer of this song is known, but in 1848, when the Serbians were fighting against the Hungarians, the song became popular.

RISE, ye Serbians, rise as one!
Night is past, now dawns the sun:
Freedom and your country call you,
Bright your banner flies,
Let no tyrant's chain enthral you,
Arm, O Serbians, arm and rise!

Onward to the battlefield,
Bid the haughty foeman yield.
Freedom and your country need you,
Serbia to her children cries,
On, for victory is the prize,
Forth to fight, and Heav'n shall speed you,
Arm, O Serbians, arm and rise!

GREECE
HYMN TO LIBERTY

These four stanzas of the Greek "Hymn to Liberty" rank with any national poetry which has been written. This translation by Mrs. S. G. Canoutas follows the original metre very closely and cleverly.

"FROM thy fearful sword I know thee
With its sharpened edge and bright;
From the glance which as the lightning
Spans the earth in length and height.
From the sacred bones thou comest
Of the brave that are no more.
Liberty, we hail, Oh, hail thee,
Ever valiant as of yore.

"There in silent expectation
Thou awaitest, sad and shy
Till a voice of hope and valor,
'Come again,' to thee should cry;
But that day was far and distant;
All was plunged in silence deep,
Crushed with terror, awed with darkness,
And benumbed in slavery's sleep.

"Thou, alas, for only comfort
Hadst the splendor of past years,
Calling back the deeds of glory
And relating them with tears.
Then awaiting, still awaiting,
For a friendly freedom's call,
In despair thy hands thou wringest,
Weeping for thy bitter thrall.

"When, oh, when, will some one call me
From the wilderness to rise?
Sounds of chains and groans and clamors
Was the answer to thy cries.
Then to Heaven thou upraised
A look dim with tearful flood
And upon thy robe were falling
Drops of pure Hellenic blood."

MEXICO
MEXICAN NATIONAL HYMN

OH my country, entwine on thy temples,
Boughs of olive so fresh and so vernal,
When inscribed in the heavens eternal,
Blessed peace for all the land thou dost see!
But if stranger and foe, in their boldness,
Dare to tread on thy soil, they must perish.
Then oh! my country, this thought only cherish:
Ev'ry son is but a soldier for thee,
Ev'ry son is but a soldier for thee.

CHORUS:
At the loud cry of war all assemble;
Then your swords and your steeds all prepare,
And the earth to its centre shall tremble,
When the cannon's deep roar rends the air.
And the earth to its centre shall tremble,
When the cannon's deep roar rends the air.

SWITZERLAND
SWISS NATIONAL HYMN

The Swiss National Hymn should not be confused with the National Anthem, but this hymn is as well-known, and by many people is considered the National Song of Switzerland. It was written by Leonard Widmer (1848) and translated by C. Fred Silberbauer.

WHEN Thou com'st with reddening dawn,
Thee I see in rays of morn,
Thro' eternity and time, Lord Sublime!
When the Alps are crimson-glowing,
Be your prayers, free Switzers, flowing
Unto God, Whose Fatherland
Leads you to His Heavenly Land.

When the shades of eve are here,
Thee I find in starry Sphere,—
Thee as Friend of man adored, Loving Lord!
From yon shining realms Elysian
Grant to me that blessed vision
Which true spirits understand:
God, in Heavenly Fatherland.

If thick mists the heights enshroud,
Then I seek in seas of cloud
Thee, whose depths no man can learn, Loving Eterne!
Lo, o'er vapors gray victorious,
Leads the sun his pageant glorious,
Bidding earthlings understand:
God in Heavenly Fatherland.

As Thou ridest the raging blast;
Be Thyself our Refuge fast
Whose hid purpose cannot err, Rescuer!
In each night of storm and terror,
Childlike trusting without error,
May our spirits understand:
God in Heavenly Fatherland.

IRELAND
THE WEARIN' O' THE GREEN

The song appeared as a street ballad during the Irish rebellion of 1798. It was forbidden by the authorities, who also sternly repressed the wearing of the shamrock as the national emblem. This law has now been officially withdrawn.

OH! Paddy dear, and did you hear the news that's goin' round?
The shamrock is forbid by law to grow on Irish ground;
Saint Patrick's day no more we'll keep, his color can't be seen,
For there's a cruel law agin the wearin' o' the green.
I met with Napper Tandy and he took me by the hand,
And said he, "How's poor old Ireland and how does she stand?"
"She's the most distressful country that ever yet was seen,
They're hanging men and women there for wearin' o' the green."

Then since the color we must wear is England's cruel red,
'Twill serve but to remind us of the blood that has been shed;
You may take the shamrock from your hat and cast it on the sod,
But never fear, 'twill take root there tho' under foot 'tis trod.
When laws can stop the blades of grass from growing as they grow,
And when the leaves in summer time their verdure dare not show,
Then I will change the color that I wear in my caubeen,
But till that day, please God, I'll stick to wearin' o' the green.

But if at last our color should be torn from Ireland's heart,
Her sons with shame and sorrow from the dear old isle will part,
I've heard a whisper of a land that lies beyond the sea,
Where rich and poor stand equal in the light of freedom's day.
Oh, Erin, must we leave you, driven by a tyrant's hand?
Must we ask a mother's blessing from a strange and distant land?
Where the cruel cross of England shall never more be seen,
And where, please God, we'll live and die still wearin' o' the green.

THE FLAG

In nearly all of the United States, Flag Day is celebrated on June 14th, the anniversary of the adoption of the national flag by the Continental Congress in 1777.

OH say can you hear
In the hush of the morn
The words of the Flag
As daylight is born?

"Lives one 'neath my stars,
Breathes one 'neath my fold
Who lives not for me
Till death strikes him cold?
"Then turn him adrift
On seas whence he came;
My stars cannot light
The depths of his shame."

The winds tell it well,
The message is clear;
'Tis thus speaks the Flag—
Oh, say, can you hear?

POLAND
JEZCZE POLSKA

Skrzynecki, a Polish officer, was commander-in-chief of the Polish forces in their struggle to free themselves from Russian rule (1830-31). He gained some brilliant victories, but hesitated to pursue his advantage. The suspicion that he was in league with the Russians led to an inquiry, and he resigned.

POLAND'S not a slave for ever while her sons alive remain,
What she lost, our strong endeavor soon shall win again,
March, march, Dombrowski, lead us to liberty,
All our chains are cast away,
Poland shall at last be free.

HEAR, O YE NATIONS!

This beautiful hymn by Frederick Lucian Hosmer, written in 1909, five years before the outbreak of the great European War, seems a prophecy of the time to come when war shall be no more.

HEAR, hear, O ye nations, and hearing obey
The cry from the past and the call of to-day!
Earth wearies and wastes with her fresh life outpoured,
The glut of the cannon, the spoil of the sword.

Lo, dawns a new era, transcending the old,
The poet's rapt vision, by prophet foretold!
From war's grim tradition it maketh appeal
To service of all in a world's commonweal.

Home, altar, and school, the mill, and the mart,
The workers afield, in science, in art,
Peace-circled and sheltered, shall join to create
The manifold life of the firm-builded state.

Then, then shall the empire of right over wrong
Be shield to the weak and a curb to the strong;
Then justice prevail and, the battle-flags furled,
The high court of nations give law to the world.

And thou, O my country, from many made one,
Last-born of the nations, at morning thy sun,
Arise to the place thou art given to fill,
And lead the world-triumph of peace and good will!

WHAT THIS STORY TELLS US

MANY cities of the world have existed for hundreds of years, and their population has grown slowly. Many of them, in fact, have fewer people now than years ago. This story tells of a city which has become one of the largest cities in the world in much less than a hundred years. Built on low land by Lake Michigan, it has spread far and wide, and has also grown high into the air. Not only is the city great in size, but it is great in vigor and determination. No task is too great for the citizens to attempt and they have a fine record of accomplishment to their credit. This story tells of the growth of the city and of some of the things which the citizens have done. We show you some pictures, which will help you to understand what has been done.

CHICAGO, THE WONDER CITY

TO-DAY, as you have doubtless heard, Chicago is the fourth largest city in the world, with a population of about 2,500,000, and is still growing very rapidly. It is one of the greatest railroad centres in the world and in enterprise, industry and power to surmount obstacles is not behind any city in the world. The people of the city believe that they can do anything they set out to do, and they succeed. Yet hardly a hundred years ago the spot on which Chicago now stands was a stretch of wilderness with only a house or two to indicate the presence of human beings.

Apparently a settlement of Indians existed here in 1671, when it was visited by a fur trader, Nicholas Perrot. Joliet and Marquette visited it a little while later, and La Salle also stopped here. The French seem to have built a little fort here, but it did not continue long.

The United States in 1803 built Fort Dearborn on the south bank of the Chicago River, near the point where it flows into Lake Michigan, but the fort was destroyed by the Indians in 1812. It was rebuilt, but in 1836 was finally abandoned as the Indians had been removed across the Mississippi River.

In 1830, when the town was laid out, twelve families lived within the limits, but at the time the fort was abandoned, the population was over 4,000. The rapid growth has continued, and it is now the second city in size in the United States. There has always been a spirit of hopefulness about the city which the great fire of 1871 did not check.

On October 8th of that year a cow kicked over a lamp in a stable on the outskirts of the city. The blaze grew beyond the control of the fire department and swept like a horrible monster, devouring the wooden buildings which then composed the greater part of the city. About 17,000 buildings were burned and nearly 100,000 persons were left homeless. The total loss was estimated at $190,000,000. Undismayed, the citizens organized committees to relieve the distress, and distributed with care the contributions sent from other parts of the United States and from Europe.

They determined to build the new city in such a manner that such a calamity could never occur again, and ten years later a wonderful city of stone had replaced the old one of wood. Chicago has risen like a phoenix from the flames. The com-

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mercial growth of the city has been wonderful. It is the greatest grain market and the great provision market of the world. To its stockyards come hundreds of thousands of animals, and Chicago meat is sent to every portion of the world. The city is also the great lumber centre, though with the continued destruction of the forests which gave her this position, she will not be able long to hold that rank.

The city now extends for twenty-four miles along Lake Michigan, and contains several lakes within its limits. A part of this lake front is given up to business, for many large vessels sail from the city, but a part has been reserved for park purposes. Some beautiful drives have been laid out beside the water.

The drinking water comes from Lake Michigan, many miles out, and great rivers are brought under the city. There are many tunnels through which freight is carried, and through which street cars run. In order to protect the water supply, the Drainage Canal was dug, one of the greatest engineering works of the country. The Chicago River was made to run backward, and take water from Lake Michigan instead of carrying water into it. By means of the Des Plaines River, the current was turned into the Mississippi. The two rivers were deepened and dug deeper toward the south. The canal is 110 to 160 feet wide at the bottom, and wider at the top. It is forty miles long. There are several other canals to carry the commerce of the mighty city.

Chicago has some of the finest public and commercial buildings in the United States. The people there claim that it was the first city to build high buildings such as we now see in all the great cities, and some of them are really beautiful. The foundations for these buildings must go deep down, sometimes a hundred feet, for the city is built upon sand and clay, and the solid rock is far below the surface. So great columns are driven down until they rest upon rock, and the building is perched upon them.

The great World's Fair, celebrating the four hundredth aniversary of the discovery of America by Columbus, was held in Chicago in 1893, a year late, to be sure. The wonderful "White City" was built on the shores of Lake Michigan, close to the spot where Perrot had stood more than two hundred years before. The people of Chicago were determined to make the Fair a success and they succeeded.

To-day the spirit of the citizens stands for growth. The city has one of the best public school systems in the country; provides wide parks and playgrounds for its children; is making a determined effort to stamp out the "White Plague;" and is struggling for cleanliness and sanitation. Moreover, the citizens are making a determined effort to secure better government, and to control the men they choose to represent them.

This determination to accomplish whatever the citizens have decided will improve their city is one of the things which have made Chicago famous. While other cities are deliberating, Chicago very often goes ahead and has finished before they have begun. A citizen of Chicago is always willing to give liberally of his money or of his time when he is shown that the contribution will help the city in any way.

Men from every part of the earth have come to the great city. In its streets every language is spoken, and every type of mankind is to be seen. Many of these foreigners have prospered as they could never hope to do in their own countries, and some of them are counted among the best citizens of their adopted country. Of course, among so many thousands, some bad men have come, who have made trouble for those who wish to see the laws obeyed.

Men have sometimes said that all that Chicago cares for is bigness. We have already shown you that this is not true. Chicago does do big things, and it is proud that it has many things which no other city can equal. The city has a right to be proud of its wonderful growth, and of the immense business which is done every year.

Nor have the means of culture been neglected. It has some of the best educational institutions in the country, and had a fine orchestra long before other cities established such organizations. It encourages artists, and the exhibitions of pictures held there are often interesting. It contains some of the most beautiful public buildings in the United States and altogether the city seems certain to continue its wonderful progress.

NEXT STORY OF THE UNITED STATES IS IN NEXT VOLUME.

IN THE HEART OF A GREAT CITY

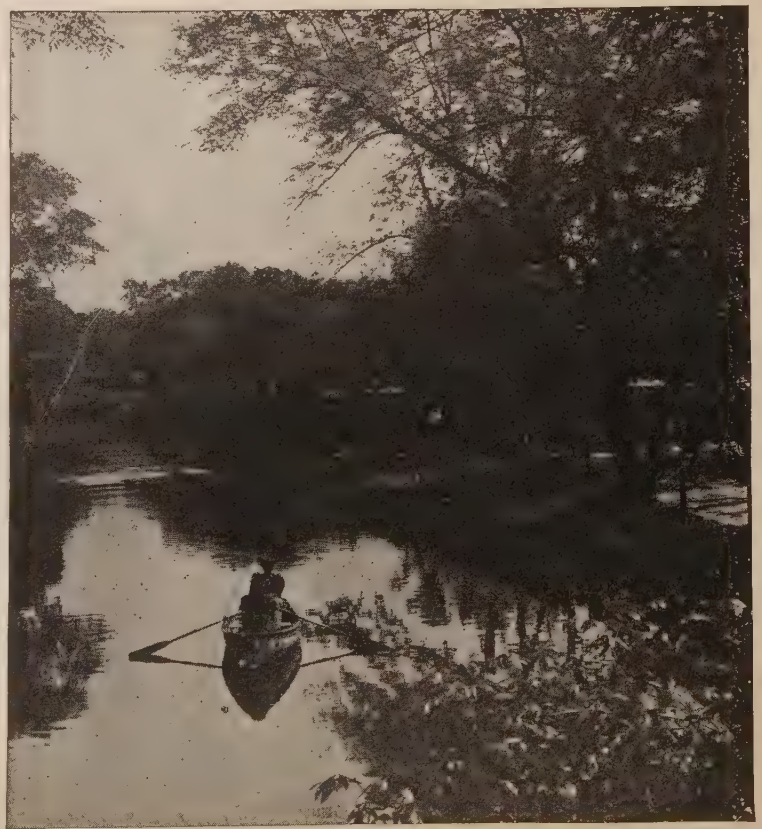


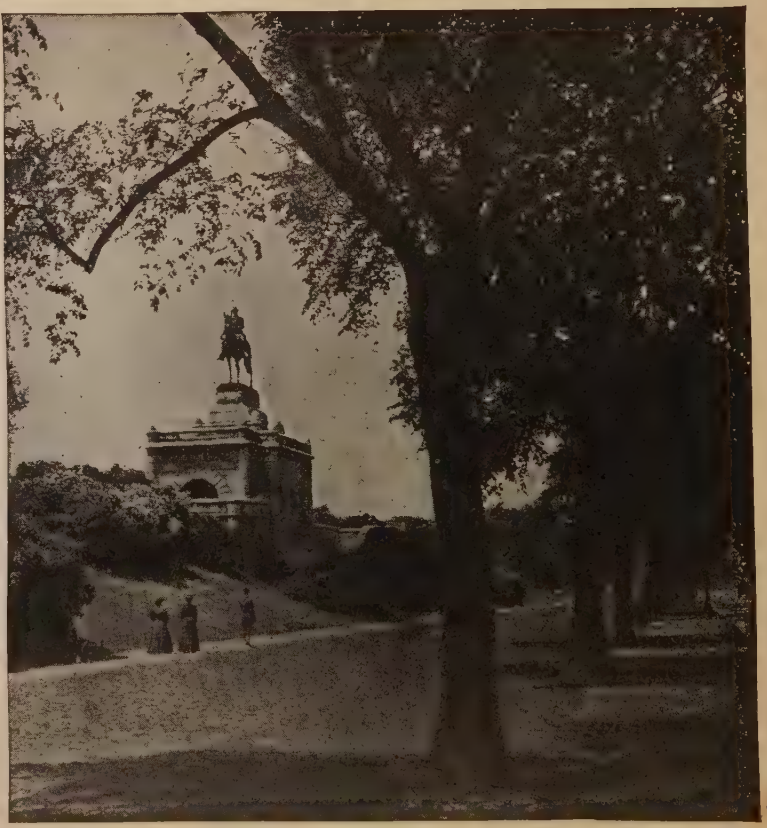


Here we see two streets in the busiest part of the city. To the left is Dearborn Street, with the great new Post Office across the way. To the right is La Salle Street, the very heart of the financial district. The building with the columns is the Illinois Trust & Savings Bank. It is in these streets that Chicago's commercial enterprises centre. Chicago architects and builders seem to have spent more care in making their great commercial buildings beautiful than those of many other cities.

5827

THE PEOPLE'S PLAYGROUNDS





Here are two pretty scenes in Lincoln Park, one of the finest parks in Chicago—a city noted for its beautiful public parks. Among the principal features of interest in Lincoln Park are the statue of Lincoln by St. Gaudens, shown elsewhere in our book, and the Grant Monument, which can be seen in the picture to the right. The Grant statue faces Lake Michigan on the Lake Shore Drive. All of this park was once sand dunes by the shores of the lake, but is now covered with grass and trees.

5828

THE GREAT TRADE AND TRAFFIC OF CHICAGO





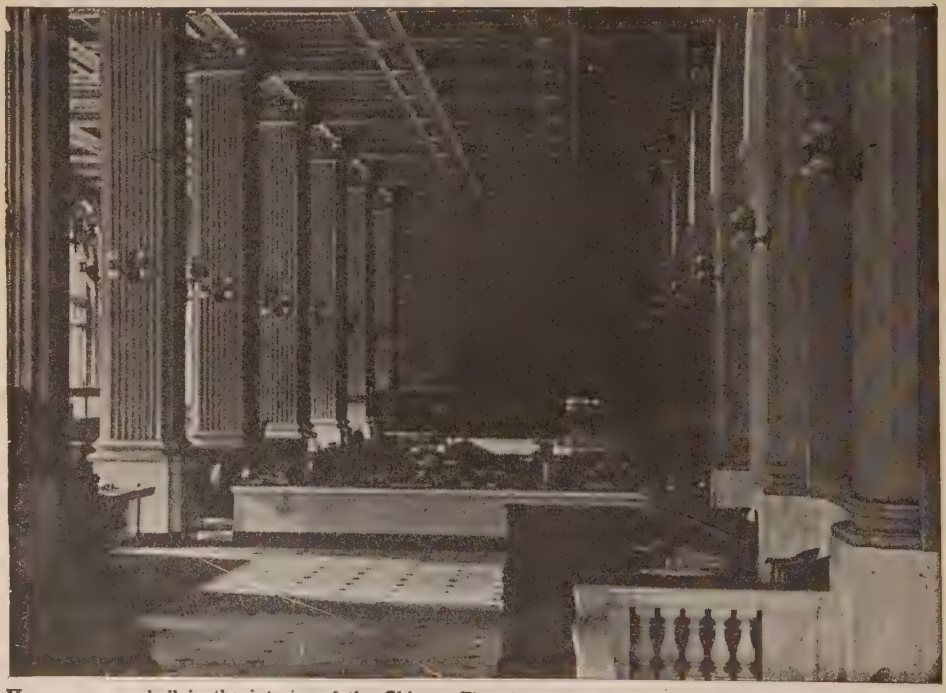
Chicago is one of the largest commercial cities in the world, so it must have every facility for forwarding its trade. Here is a picture of two of the railway bascule bridges on the Chicago River, which open up to allow the tall-masted schooners to pass through. On the right we see the Produce Market, from which comes some of the food to supply this mighty city. Chicago is by far the greatest food market in the world. Corn, wheat and meat are shipped to all parts of the world.

5829

HALLS OF LEARNING AND OF WEALTH



Here is a picture of the University of Chicago, showing the campus and a few of its many buildings. This institution is one of the largest and most progressive in the country, and has a very fine library of over five hundred thousand volumes, which is made good use of by the thousands of students who attend the various departments. The university is open during the whole year.



Here we see a hall in the interior of the Chicago First National Bank. This is said to be the finest banking building in the world. Chicago, a city of about 2,500,000 people, with its immense commercial enterprises of every sort, necessarily does one of the largest banking businesses of any city in the world.

WHAT THIS STORY TELLS US

WASHINGTON IRVING'S Knickerbocker History of New York, from which this selection is taken, was published more than one hundred years ago. The work pretended to be written by an old Dutchman named Diedrich Knickerbocker, and described in humorous style the manners and customs of the early Dutch settlers of New Amsterdam, now New York. It gave sketches of the four Dutch governors, Peter Minuit, Wouter Van Twiller, Wilhelm Kieft and Peter Stuyvesant. The descriptions are exaggerated, of course, but nevertheless have a basis of truth. This extract is from the chapter dealing with Wouter Van Twiller. You may read the story of Washington Irving's life in another place in the book.

KNICKERBOCKER DAYS IN NEW YORK

CONTINUED FROM 5619

THE modern spectator, who wanders through the streets of this populous city, can scarcely form an idea of the different appearance they presented in the primitive days of the Governor, Wouter Van Twiller. The busy hum of multitudes, the shouts of revelry, the rumbling equipages of fashion, the rattling of accursed carts, and all the spirit-grieving sounds of brawling commerce, were unknown in the settlement of New Amsterdam. The grass grew quietly in the highways—the bleating sheep and frolicsome calves sported about the verdant ridge where now the Broadway loungers take their morning stroll—the cunning fox or ravenous wolf skulked in the woods where now are to be seen the dens of Gomez and his righteous fraternity of money brokers—and flocks of vociferous geese cackled about the fields where now the great Tammany wigwam and the patriotic tavern of Martling echo with the wranglings of the mob.

In these good times did a true and enviable equality of rank and property prevail, equally removed from the arrogance of wealth, and the servility and heartburnings of repining poverty—and what in my mind is still more conducive to tranquillity and harmony among friends, a happy equality of intellect was likewise to be seen. The minds of the good burghers of New Amsterdam seemed all to have been cast in one mould, and to be those honest, blunt minds which, like certain manufactures, are made by the gross, and considered as exceedingly good for common use.

Thus it happens that your true dull minds are generally preferred for public employ, and especially promoted to city honors,—your keen intellects, like razors, being considered too sharp for common service. I know that it is common to rail at the unequal distribution of riches, as the great source of jealousies, broils, and heartbreakings; whereas, for my part, I verily believe it is the sad inequality of intellect that prevails, that embroils communities more than anything else; and I have remarked that your knowing people, who are so much wiser than anybody else, are eternally keeping society in a ferment. Happily for New Amsterdam, nothing of the kind was known within its walls—the very words of learning, education, taste, and talents were unheard of—a bright genius was an animal unknown, and a bluestocking lady would have been regarded with as much wonder as a horned frog or a fiery dragon. No man, in fact, seemed to know more than his

neighbor, nor any man to know more than an honest man ought to know, who has nobody's business to mind but his own; the parson and the council clerk were the only men that could read in the community, and the sage Van Twiller always signed his name with a cross.

The person of this illustrious old gentleman was as regularly formed, and nobly proportioned, as though it had been modeled by the hands of some cunning Dutch statuary, as a model of majesty and lordly grandeur. He was exactly five feet six inches in height, and six feet five inches in circumference. His head was a perfect sphere, and of such stupendous dimensions, that Dame Nature, with all her sex's ingenuity, would have been puzzled to construct a neck capable of supporting it; wherefore she wisely declined the attempt, and settled it firmly on the top of his backbone, just between the shoulders. His body was of an oblong form, particularly capacious at bottom; which was wisely ordered by Providence, seeing that he was a man of sedentary habits, and very averse to the idle labor of walking. His legs, though exceeding short, were sturdy in proportion to the weight they had to sustain; so that when erect he had not a little the appearance of a robustious beer barrel, standing on skids. His face, that infallible index of the mind, presented a vast expanse, perfectly unfurrowed or deformed by any of those lines and angles which disfigure the human countenance with what is termed expression. Two small grey eyes twinkled feebly in the midst, like two stars of lesser magnitude in the hazy firmament; and his full-fed cheeks, which seemed to have taken toll of everything that went into his mouth, were curiously mottled and streaked with dusky red, like a Spitzenberg apple.

His habits were as regular as his person. He daily took his four stated meals, appropriating exactly an hour to each; he smoked and doubted eight hours, and he slept the remaining twelve of the four and twenty. Such was the renowned Wouter Van Twiller—a true philosopher, for his mind was either elevated above, or tranquilly settled below, the cares and perplexities of this world. He had lived in it for years, without feeling the least curiosity to know whether the sun revolved round it, or it round the sun; and he had watched, for at least half a century, the smoke curling from his pipe to the ceiling, without once troubling his head with any of those numerous theories, by which a philosopher would have perplexed his brain, in accounting for its rising above the surrounding atmosphere.

In his council he presided with great state and solemnity. He sat in a huge chair of solid oak, hewn in the celebrated forest of the Hague, fabricated by an experienced timmerman of Amsterdam, and curiously carved about the arms and feet, into exact imitations of gigantic eagle's claws. Instead of a sceptre, he swayed a long Turkish pipe, wrought with jasmin and amber, which had been presented to a Stadtholder of Holland, at the conclusion of a treaty with one of the petty Barbary powers. In this stately chair would he sit, and this magnificent pipe would he smoke, shaking his right knee with a constant motion, and fixing his eye for hours together upon a little print of Amsterdam, which hung in a black frame against the opposite wall of the council chamber. Nay, it has even been said, that when any deliberation of extraordinary length and intricacy was on the carpet, the renowned Wouter would absolutely shut his eyes for full two hours at a time, that he might not be disturbed by external objects.

Such are the comfortable and thriving effects of a fat government. The province of the New Netherlands, destitute of wealth, possessed a sweet tranquillity that wealth could never purchase. There were neither public commotions, nor private quarrels; neither parties, nor sects, nor schisms; neither persecutions, nor trials, nor punishments; nor were there counselors, attorneys, catchpoles, or hangmen. Every man attended to what little business he was lucky enough to have, or neglected it if he pleased, without asking the opinion of his neighbor. In those days, nobody meddled with concerns above his comprehension, nor thrust his nose into other people's affairs; nor neglected to correct his own conduct, and reform his own character, in his zeal to pull to pieces the characters of others —but in a word, every respectable citizen ate when he was not hungry, drank when he was not thirsty, and went regularly to bed when the sun set, and the fowls went to roost, whether he were sleepy or not; all which tended so remarkably to the

population of the settlement, that I am told every dutiful wife throughout New Amsterdam made a point of enriching her husband with at least one child a year, and very often a brace—this superabundance of good things clearly constituting the true luxury of life, according to the favorite Dutch maxim, that "more than enough constitutes a feast."

The houses of the higher class were generally constructed of wood, excepting the gable end, which was of small black and yellow Dutch bricks, and always faced on the street, as our ancestors, like their descendants, were very much given to outward show, and were noted for putting the best leg foremost. The house was always furnished with abundance of large doors and small windows on every floor; the date of its erection was curiously designated by iron figures on the front; and on the top of the roof was perched a fierce little weathercock, to let the family into the important secret which way the wind blew. These, like the weathercocks on the tops of our steeples, pointed so many different ways, that every man could have a wind to his mind;—the most stanch and loyal citizens, however, always went according to the weathercock on the top of the governor's house, which was certainly the most correct, as he had a trusty servant employed every morning to climb up and set it to the right quarter.

In those good days of simplicity and sunshine, a passion for cleanliness was the leading principle in domestic economy and the universal test of an able housewife—a character which formed the utmost ambition of our unenlightened grandmothers. The front door was never opened except on marriages, funerals, new-year's days, the festival of St. Nicholas, or some such great occasion. It was ornamented with a gorgeous brass knocker, curiously wrought, sometimes in the device of a dog, and sometimes of a lion's head, and was daily burnished with such religious zeal, that it was oft-times worn out by the very precautions taken for its preservation. The whole house was constantly in a state of inundation, under the discipline of mops and brooms and scrubbing brushes; and the good housewives of those days were a kind of amphibious animal, delighting exceedingly to be dabbling in water—insomuch that a historian of the day gravely tells us that many of his townswomen grew to have webbed fingers like unto a duck; and some of them, he had little doubt, could the matter be examined into, would be found to have the tails of mermaids—but this I look upon to be a mere sport of fancy, or what is worse a wilful misrepresentation.

The grand parlor was the sanctum sanctorum, where the passion for cleaning was indulged without control. In this sacred apartment no one was permitted to enter, excepting the mistress and her confidential maid, who visited it once a week, for the purpose of giving it a thorough cleaning, and putting things to rights—always taking the precaution of leaving their shoes at the door, and entering devoutly in their stocking feet. After scrubbing the floor, sprinkling it with fine white sand, which was curiously stroked into angles, and curves and rhomboids, with a broom,—after washing the windows, rubbing and polishing the furniture, and putting a new bunch of evergreens in the fireplace—the window shutters were again closed to keep out the flies, and the room carefully locked up until the revolution of time brought round the weekly cleaning day.

As to the family they always entered in at the gate, and most generally lived in the kitchen. To have seen a numerous household assembled around the fire, one would have imagined that he was transported back to those happy days of primeval simplicity, which float before our imaginations like golden visions. The fireplaces were of a truly patriarchal magnitude, where the whole family, old and young, master and servant, black and white, nay, even the very cat and dog, enjoyed a community of privilege, and had each a right to a corner. Here the old burgher would sit in perfect silence, puffing his pipe, looking in the fire with half-shut eyes, and thinking of nothing for hours together; the goede vrouw on the opposite side would employ herself diligently in spinning yarn or knitting stockings. The young folks would crowd around the hearth, listening with breathless attention to some old crone of a negro, who was the oracle of the family, and who, perched like a raven in a corner of the chimney, would croak forth for a long winter afternoon a string of incredible stories about New

England witches—grisly ghosts, horses without heads—and hairbreadth escapes and bloody encounters among the Indians.

In those happy days a well-regulated family always rose with the dawn, dined at eleven, and went to bed at sundown. Dinner was invariably a private meal, and the fat old burghers showed incontestable symptoms of disapprobation and uneasiness at being surprised by a visit from a neighbor on such occasions. But though our worthy ancestors were singularly averse to giving dinners, yet they kept up the social bands of intimacy by occasional banqueting, called tea parties.

These fashionable parties were generally confined to the higher classes, or noblesse, that is to say, such as kept their own cows, and drove their own wagons. The company commonly assembled at three o'clock, and went away about six, unless it was in winter time, when the fashionable hours were a little earlier, that the ladies might get home before dark. The tea table was crowned with a huge earthen dish, well stored with slices of fat pork, fried brown, cut up into morsels, and swimming in gravy. The company being seated around the genial board, and each furnished with a fork, evinced their dexterity in launching at the fattest pieces in this mighty dish—in much the same manner as sailors harpoon porpoises at sea, or our Indians spear salmons in the lakes. Sometimes the table was graced with immense apple pies, or saucers full of preserved peaches and pears; but it was always sure to boast an enormous dish of balls of sweetened dough, fried in hog's fat, and called doughnuts, or olykoeks—a delicious kind of cake, at present scarce known in this city, excepting in genuine Dutch families.

The tea was served out of a majestic delft teapot, ornamented with paintings of fat little Dutch shepherds and shepherdesses tending pigs—with boats sailing in the air, and houses built in the clouds, and sundry other ingenious Dutch fantasies. The beaux distinguished themselves by their adroitness in replenishing this pot from a huge copper teakettle, which would have made the pigmy macaronies of these degenerate days sweat merely to look at it. To sweeten the beverage, a lump of sugar was laid beside each cup—and the company alternately nibbled and sipped with great decorum, until an improvement was introduced by a shrewd and economic old lady, which was to suspend a large lump directly over the tea table, by a string from the ceiling, so that it could be swung from mouth to mouth—an ingenious expedient which is still kept up by some families in Albany; but which prevails without exception in Communipaw, Bergen, Flatbush, and all our uncontaminated Dutch villages.

At these primitive tea parties the utmost propriety and dignity of deportment prevailed. No flirting or coquetting—no gambling of old ladies, nor hoyden chattering and romping of young ones—no self-satisfied struttings of wealthy gentlemen, with their brains in their pockets—nor amusing conceits, and monkey advertizements, of smart young gentlemen with no brains at all. On the contrary, the young ladies seated themselves demurely in their rush-bottomed chairs, and knit their own woolen stockings; nor ever opened their lips, excepting to say, yah, Mynheer, or yah, Vrouw, to any question that was asked them; behaving, in all things, like decent, well-educated damsels. As to the gentlemen, each of them tranquilly smoked his pipe, and seemed lost in contemplation of the blue and white tiles with which the fireplaces were decorated; wherein sundry passages of Scripture were piously portrayed—Tobit and his dog figured to great advantage; Haman swung conspicuously on his gibbet; and Jonah appeared most manfully bouncing out of the whale.

The parties broke up without noise and without confusion. They were carried home by their own carriages, that is to say, by the vehicles Nature had provided them, excepting such of the wealthy as could afford to keep a wagon. The gentlemen gallantly attended their fair ones to their respective abodes, and took leave of them with a hearty smack at the door; which, as it was an established piece of etiquette, done in perfect simplicity and honesty of heart, occasioned no scandal at that time, nor should it at the present—if our great-grandfathers approved of the custom, it would argue a great want of reverence in their descendants to say a word against it.

CONTINUED ON PAGE 5951.

WHAT THIS STORY TELLS US

WE have already told you in another place about Peter Pan, the boy who wouldn't grow up. Now we come to another play which will also be popular among boys and girls as well as their elders for a long time. This is the Blue Bird, by the famous Belgian writer, Maurice Maeterlinck. In it he tells the story of the search for happiness. The two children go over the world seeking the blue bird, which we find stands for happiness. They find many birds which seem blue in certain lights, but when closely examined are seen to be of some other color. Finally, after enduring many dangers and becoming weary with the search, they return home and find the blue bird there, where it has been all the time. Their eyes were not keen enough to see it until after they had searched far and wide and had tested the friendship of all their companions.

THE BLUE BIRD

CONTINUED FROM 5775

ONE Christmas Eve a little boy and girl, named Tyltyl and Mytyl, were sound asleep in their little cots. Their mother had just crept in to tuck them up in bed, and, turning down the lamp, had tiptoed out again. She felt a little sad, because owing to the stormy weather their daddy was not able to go to work in the forest; and she had no money to buy presents for their stockings. Suddenly the children opened their eyes and sat up in bed with a strange feeling that something was about to happen. The light in the lamp flickered faintly, and soft yellow glow poured through the closed shutters of the windows.

"Mytyl, are you asleep?" whispered Tyltyl.

"No, are you?" returned Mytyl.

"No!" retorted Tyltyl with boyish scorn. "How can I be asleep when I'm talking to you?"

For a few moments they whispered together. Then Tyltyl said abruptly: "I have an idea!"

"What?" asked Mytyl eagerly.

"See the light coming through the shutters. The rich children opposite are having a party. Let's get up and look."

"But we mustn't," said Mytyl, taken aback at her big brother's daring.

"Why not?" returned Tyltyl, with a magnificent scorn for consequences. Hand in hand, they ran across the room in their bare feet, and pushing back the shutters, looked eagerly out. Sure enough, through the windows of the big house across the street they could see a big Christmas tree laden with presents and children in beautiful frocks dancing about. Suddenly, as Tyltyl and Mytyl knelt on the stool by the window, pressing their noses against the cold pane, a loud knock sounded upon their door.

"What's that?" exclaimed Tyltyl, startled.

As he spoke, the door slowly opened and a little old woman stepped into the room. She was dressed all in green with a big red hood, and she leaned heavily upon a big ebony stick.

"I am the Fairy Bérylune," said the little old woman. "Have you here the bird that is blue or the grass that sings? I need the blue bird for my little girl, who is very ill."

There was a moment's silence.

"Tyltyl has a bird," ventured Mytyl timidly.

"Where is the bird?" asked the Fairy.

"Over there in the cage," said Tyltyl.

The Fairy hobbled over to the cage and looked at the bird with her sharp little eyes.

"I don't want it," she said shortly.

"It is not blue enough. I must absolutely have the Blue Bird. It stands for happiness, and my little girl cannot be well until she is happy. You will have to go and find for me the one I want. Get dressed at once, for you'll have to start right away."

"But—" objected Tyltyl, "we have no shoes."

"That doesn't matter;" said the Fairy, "I will give you a magic hat with a diamond in front to help you in your search for the Blue Bird. It will give you the power to see things as they really are. Press the top, you can see the soul of things. Turn the diamond to one side and you will see the past. Turn it to the other and you will see the future."

As she spoke the Fairy pushed a little green hat firmly down upon Tyltyl's head.

"Now turn the diamond," she commanded.

As Tyltyl turned it a wonderful change came over everything in the room. The old Fairy became a princess of marvelous beauty. The cottage walls suddenly became blue and transparent as sapphire, and gleamed and sparkled like precious stones. The souls of the loaves in the oven, in the form of little men in crust-colored garments, whisked out of the Bread. The Dog and the Cat, lying quietly by the hearth, woke up and began to talk. The soul of Water, streaming and tearful, came pouring out of the tap. The spirit of the flames sprang hissing from the Fire. The soul of Sugar suddenly appeared as a funny man, in a long white and blue coat, with a very sweet smile. The Milk jug upset from the table with a crash and a bashful, white figure arose dripping from the floor. The lamp, too, fell over with a bang, and from the Light sprang up a maiden of dazzling beauty.

"Oh! Oh!" exclaimed Tyltyl and Mytyl.

"Don't be afraid," said the Fairy. "Those are only the souls of things, which most people are too stupid and too blind to see."

Suddenly a knock sounded again at the door.

"That's daddy!" exclaimed Tyltyl, alarmed. "He's heard us."

"Turn the diamond," commanded the Fairy. "Quick! from left to right!"

Tyltyl switched the cap from one side to the other, and the Fairy returned to an old woman once more; but he had turned the hat too quickly, and the souls of Fire, and Water, and Sugar, and Milk, and Bread, and Light, and the Dog and Cat did not have time to resume their natural shapes. A loud knocking was again heard at the door.

"Come! Let us go out of the window," said the Fairy, as if going out of windows were the most natural thing in the world. "You shall all come to my house. You Bread, take the cage in which to put the Blue Bird! Quick! Quick! Let's waste no time!"

And before they knew it, she had whisked them all out of the window, and so it came about that, on Christmas Night, while the bells rang out lustily, Tyltyl and Mytyl went in search of the Blue Bird that was to bring them happiness. The Fairy carried them to her palace where she gave Tyltyl and Mytyl and Bread and Sugar and the others beautiful new clothes to put on. Then she escorted the children to the threshold of the Land of Memory.

"You are going to visit your grandmother and grandfather," the Fairy told them. "You may find the Blue Bird there. You must go alone, but we will all meet you when you come back."

Then she left them. For a while the children walked on and on. Presently they could not see their way any further, for a thick fog hung over all the land. At last they came to a large oak with a sign-board nailed to it, and on the board were these words: "The Land of Memory." Suddenly Mytyl began to cry.

"Where are grandad and granny?" she sobbed.

"Behind the fog," returned Tyltyl bravely. "Come, don't cry. Look, the fog is lifting already, and we shall see what's behind it."

As Tyltyl spoke, the mist began to dissolve. It grew thinner and thinner, until they saw before them in the woods a peasant's little cottage, nestling away under the trees. A bird cage with a blackbird sleeping in it, his head folded under his wing, hung in the open window. A row of beehives stood near the cottage, but not a bee could be heard humming in the sunshine. Everything seemed asleep. Beside the cottage door on a bench sat

HUNTING FOR HAPPINESS



Here we see Tyltyl and Mytyl taking supper at their grandparents' home in the Land of Memory. Around the table are gathered all their little brothers and sisters who have died, and the blackbird hangs over the window. The bird seems blue to Tyltyl, so the children carry it back to Light, believing that it is the bird they seek, only to find, to their bitter disappointment, that it has turned black again.



Everywhere the children have looked for the Blue Bird for Happiness and have not found him. Now at the end of their search, they are saying farewell to Light, who has guided them so faithfully on their journeys. She is telling them that, though she must go back into the Land of Silence, they will be able to see her always—in the morning sunshine, in the rays that float in through the window, in the soft glow of the evening lamp. The children would be sorrowful but for the comfort of her words.

an old man and an old woman, and their heads nodded up and down as they dozed.

"It's grandad and granny!" exclaimed Tyltyl wonderingly.

"Yes! Yes!" cried little Mytyl, clapping her hands with delight. "So it is! So it is!"

Presently they saw their grandmother slowly open her eyes, stretch herself and look at Grandfather Tyl, who was also waking up.

"I have a notion that our grandchildren are coming to see us to-day," Tyltyl and Mytyl heard her say.

The children rushed out from behind the trees.

"Here we are! Grandad! Granny!" they shouted, jumping up and down. "Here we are!"

For a few moments their grandfather and grandmother were so happy to see them that all they could do was to hug and kiss them delightedly.

"Why don't you come oftener to see us?" they asked. "It's months and months now that you've forgotten us, and that we have seen nobody."

"We couldn't," Tyltyl explained. "And to-day, it's only because of the Fairy."

"The last time you came," said Granny, "was on All-hallows' E'en, when the church bells were ringing."

"But"—exclaimed Tyltyl, much astonished, "we didn't go out that day!"

"No, but you thought of us," answered their grandmother, "and every time you think of us we wake up and see you again."

Presently Mytyl noticed the sleeping bird, and exclaimed, "Why, here is our old blackbird! Does he still sing, Granny?"

As she spoke the bird woke up and began to sing.

"You see," said Granny triumphantly, as soon as one thinks of him—"

"But the bird's blue, not black!" interrupted Tyltyl, in amazement. "He's blue as a blue glass marble. Grandad! Granny! May I have him to take back to the Fairy?"

"Certainly," said they, so Tyltyl put him in his cage, and after supper with their grandparents, the children said good-bye.

"Don't cry, Granny dear," said Tyltyl, "we will come back as often as we can."

"Come back every day," said their grandmother wistfully. "It's our only pleasure to have your thoughts visit us."

"Yes, come often," added their grandfather. "We have no other amusements."

So with their precious cage tucked under Tyltyl's arm, they set out, waving their handkerchiefs now and then to their dear old grandad and granny. As they walked, the fog closed in about them and hid the cottage from their sight. But a great disappointment awaited them, for when they reached the palace of Light, they found that the bird in the cage was no longer blue. He had turned black. Light smiled when Tyltyl told her of his first failure.

"Do not be sad," she said. "Are you not pleased to have seen your grandparents? Is not that enough happiness for one day? Are you not glad, too, to have restored the old blackbird to life?"

Once more they set out in search for the Blue Bird, and this time the Fairy sent them to the Palace of Night, accompanied by Bread, Sugar and the Dog. They wandered on until they came to a wonderful hall lined with gold and ebony and shining black marble. On a great throne in the middle of the hall sat a woman clad in long, trailing, black robes, and in front of the throne sat the Cat. Now the Cat was anxious to prevent the children from finding the Blue Bird, and he had hurried ahead to warn Night that the children were coming. But the Cat was a great hypocrite, and as soon as he saw the children he rushed up to them in pretended delight.

"This way, little master, this way," he purred. "I have told Night you were coming, and she is delighted to see you."

Tyltyl explained his errand to the sombre figure on the throne.

"I have come to look for the Blue Bird," he said; "may I have the keys of your doors?"

"Have you the sign?" asked Night grudgingly.

Tyltyl touched his hat.

"Behold the Diamond," he said.

Night scowled blackly, but delivered the keys into his hands.

"Look to yourself if you meet with misfortune," said she.

One door after another, around the great black hall, Tyltyl unlocked. In one he found the Ghosts, in another the Wars, in another the Shades and Terrors,

and in another the Perfumes of the Night, in still another the Will-o'-the Wisps and the Fireflies and the Stars. Behind one door he found the Sicknesses, and a little Cold-in-the-Head came hopping out, sneezing, coughing and blowing its nose, but in none could he find the Blue Bird. At last he turned to the great door behind the throne of Night. With warning, outstretched hands she blocked his path.

"Do not open that one," said Night terribly. "If you do you will surely be lost."

Whereupon Mytyl, who had been frightened by all the strange things she had seen, began to cry, and Bread flung himself on his knees before Tyltyl.

"Don't do it, master dear," he besought him with chattering teeth.

"You will sacrifice the lives of all of us," mewed the Cat.

"I must open the door," answered Tyltyl, rather frightened, but gathering his courage together. "Sugar and Bread, take Mytyl by the hand and run away with her."

So the others fled away as fast as they could, only Tylo, the Dog, half dead with fear, remaining faithfully by his master's side, muttering, "I shall stay, I shall stay! I am not afraid! I shall stay with my little god!"

With trembling fingers Tyltyl inserted the key in the great doors. At the first touch they slid softly aside. Tyltyl stood staring in utter bewilderment, for instead of the fearful cavern he had expected, a beautiful garden lay before him, shimmering in the moonshine. Flowers that shone like stars bloomed everywhere, waterfalls that came rushing from the sky made music in the air. And then there was something whirling like a blue cloud among the clusters of roses.

"Mytyl, Tylo!" shouted Tyltyl, half wild with excitement. "Come all. Help me! Thousands of Blue Birds. Millions! You can catch them by the handfuls."

The children rushed into the dazzling garden and came forth, their arms full of struggling Blue Birds, and hurried away as fast as they could to find the Fairy and tell her the good news. The Cat remained behind.

"Have they got the real Blue Bird?" questioned Night fearfully.

"No .... I see him there, on that moonbeam," exulted the Cat. "They could not reach him! He kept too high."

In the meanwhile the children had met the spirit of Light.

"Have you caught the Blue Bird?" asked Light.

"Yes, yes," exclaimed Tyltyl eagerly. "As many as we want! Here they are!"

But, as he held out the birds, he suddenly saw that they were dangling limp and lifeless in his hands. He had only caught the moonbeam Blue Birds. The real one had escaped.

Still the children wandered on and on until they received a note from Fairy Bérylune telling them to look for the Blue Bird of Happiness at midnight in the Churchyard, so one night when the moon was shining brightly on the grassy mounds and the wooden crosses on the graves, Tyltyl and Mytyl crept into the churchyard. Mytyl was frightened.

"I want to go away," she pleaded.

"Not now, little sister," said Tyltyl, mustering his failing courage. "I am going to turn the diamond and we'll see the souls of the dead."

"No! No!—Don't," gasped Mytyl. "I am so frightened, brother!"

"There's no danger," Tyltyl reassured her.

"I—I don't want to see the dead," persisted Mytyl. "I don't want to see them."

"Very well, you sha'n't see them. Shut your eyes," returned Tyltyl, and he put up his hand to turn his cap. For a moment he too felt like closing his eyes. There was a pause of terrifying silence. Then, slowly, the crosses began to totter, the mounds opened.

"They're coming out," gasped Mytyl, cowering against Tyltyl.

Slowly, slowly, the slabs rose up,—a tiny mist came from the ground. Then little by little green shoots pushed their heads through the sod, and a great full-blown rose spread on every grave. Mytyl opened her eyes and stared with dazzled eyes at their wonderful golden hearts.

"Where—where are the dead?" she whispered, trembling.

"There are no dead," exclaimed Tyltyl, awestruck.

But the Blue Bird was not in the Churchyard. The children next sought the Blue Bird in the Kingdom of the Future. On and on they went until they

came to the blue Halls of the Azure Palace, where they found the children who were waiting to be born, hundreds of thousands of them—all dressed in long blue, mist-like garments. Some were playing, others strolling to and fro, others talking or dreaming; many were asleep; many were working at future inventions; and everything about was blue, blue as the summer sky.

"Where are we?" asked Tyltyl.

"In the Kingdom of the Future," Light told them. "We shall probably find the Blue Bird here."

As Light spoke a crowd of little Blue Children began to gather about, their fingers in their mouths, their eyes wide as saucers.

"Live children! Come look at the little live children," they cried.

They brought all their inventions for the children to see.

"Look at my daisies," cried one, bending under the weight of a flower as big as a cartwheel. "They will grow like that when I am on earth."

"See my pears!" said another. "They will all be like that when I am thirty!"

One little child ran up and began to kiss Tyltyl and Mytyl.

"I shall be your brother," the child said. "I am coming to you next Palm Sunday."

"What have you got in that bag?" asked Tyltyl curiously.

"I bring three illnesses," the child replied. "Whooping cough, scarlatina, measles."

"And after that?" queried Tyltyl.

"After that . . . I shall leave you."

"But it will hardly be worth while coming," exclaimed Tyltyl.

"We can't pick and choose," the little unborn soul replied.

Suddenly a loud swelling sound was heard through the Azure Hall. Two great opal doors on one side began to move.

"What is that?" asked Tyltyl.

"That's Time," replied the Child.

The great opal doors turned slowly on their hinges, and old Father Time appeared on the threshold. Behind him could be seen a boat, sails set ready for the sailing.

"Are they ready, whose hour has now struck?" he called out very gruffly.

The Blue Children came hurrying, crowding from every side.

"Here we are! Here we are!" they shrilled.

"One at a time," said Father Time, as he hurried those who were to be born into the boat.

Light threw her gold cloak around Tyltyl and Mytyl, and dragged them to a corner of the hall from where they could see everything without being seen by anyone.

As the boat set sail, the little Blue souls called out their farewells to the children who were going to be born.

"Good-bye, Pierre! Good-bye, Jean. . . . Try to know me again. . . . I shall find you. . . . Don't lose your ideas. . . . Don't lean too far into space."

Then the children's voices in the boat were heard faintly in the distance: "The Earth! The Earth! How beautiful it is!" Then a strange, wonderful swelling sound of gladness arose.

"What is that?" whispered Tyltyl.

"It is the song of the mothers coming out to meet them," said Light.

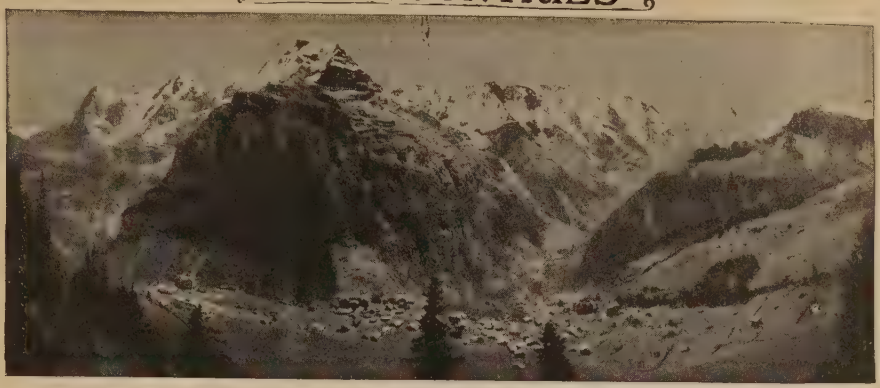
Meanwhile Time had come back to close the opal doors. Suddenly he caught sight of the children, and he advanced upon them furiously.

"Hurry!" said Light. "Hurry! Take the Blue Bird, Tyltyl, and go in front." She put into his arms a gorgeous Blue Bird. Just as they were crossing the threshold of the palace, Time with a roar of rage darted his scythe at Tyltyl. The boy, who was very much taken by surprise, opened his arms and the Bird soared away.

And thus it came to pass that the children could not find the Blue Bird of Happiness. Everywhere they looked for him, but nowhere could he be found. At last one day they woke up to find themselves back in their own little beds at home in the cottage, and there in their own home they found the Blue Bird of Happiness for which they had spent their time searching everywhere else in vain.

And this is just the case with most of us—we are on the look-out for happiness everywhere, in all the out-of-the-way places possible, when, if we did but know it, it is waiting for us in all the simple joys and duties of our own homes.

CONTINUED ON PAGE 5907.



THE MAGNIFICENT PANORAMA OF THE ALPS AS SEEN FROM MÜRREN

AMONG THE SNOW-CAPPED ALPS

A FAMILY TOUR IN SWITZERLAND

CONTINUED FROM 5660

OUR first united Swiss holiday was long under discussion. For months, maps and guide-books have been pored over with a view to making schemes of tours, and the chief topics of thought and conversation have been the heaviness and fit of our boots, the lightness of our waterproofs and luggage, the suitability of various sorts of hats to stand rain and wind, as well as shade the eyes from too much sun. Other preparations have been extra vigor in our regular Swedish exercises and deep breathings, a handful of salt in our baths, and steady walking on every possible opportunity, especially up hills. At last we are off, all very fit and everything complete.

We are a merry party at breakfast our first morning at Berne, in spite of a stormy Atlantic crossing and a long night journey across the plains of France. Our spirits begin to revive when the wide, sad plains—so inexpressibly lovely in the misty grey dawn—give way to the uplifting hills of the Jura country which usher us into Switzerland. As we watch the hastening rivers and the fleeting woods and valleys — foretastes of delights to come—we feel that the real starting-point of our long-talked-of, long-prepared-for tour is at hand.

After breakfast we find a shop where we can buy iron-pointed walking-sticks and the brown waterproof knapsacks with pockets, that fit so comfortably to the shoulders with straps. This done, we long more than ever to be off, but Berne holds us. How interesting are the old towers, the ancient clock with its curious mechanical contrivances, the shop arcades, the beautiful fountains, the famous bears in their pit, eating oranges so neatly, bathing in their pond with absurd antics!

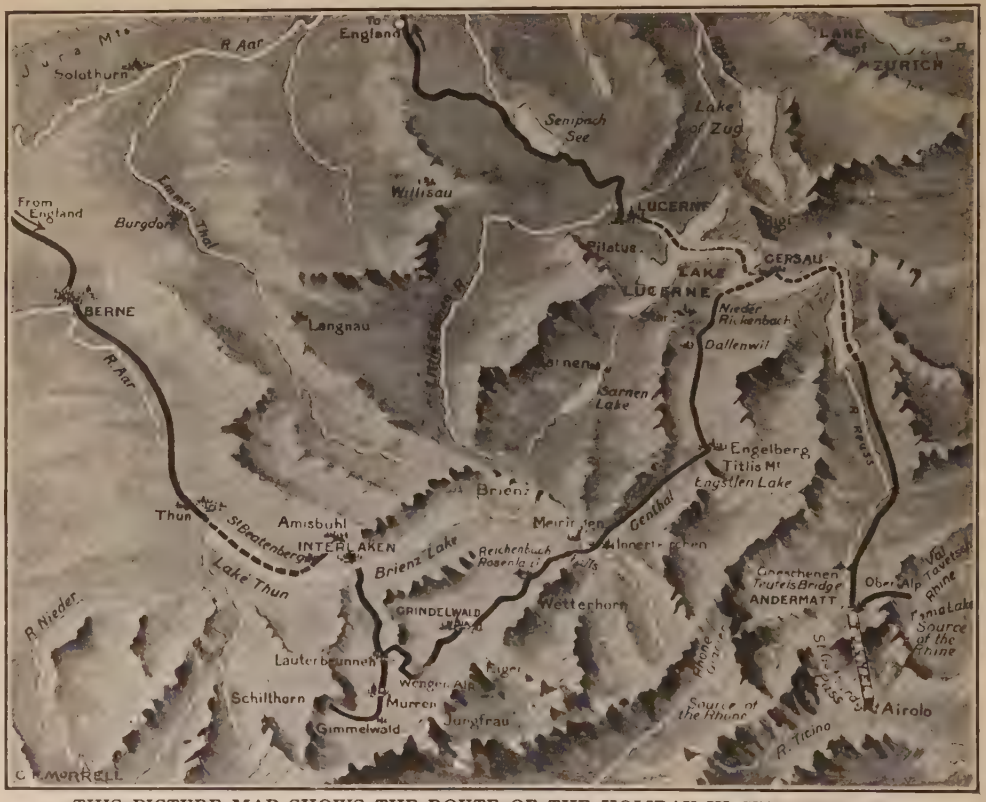
The sun is shining, and we have no eyes for anything but the views from the promenades, from the high bridge across the swiftly flowing Aar, from the grand terrace on which the great church stands boldly out over a hundred feet above the river, from the Schänzli, a hill close by, where we have our first out-of-door meal.

But the view! It is our first sight of the distant glittering white mountains, of which we have so often read. They seem to us, as we gaze, a sort of link between earth and heaven, rising from the lower hills to mingle with the clouds of the sky above. A mighty company of giants they look, these chief peaks of the Bernese Oberland, or Highland, and as we sit on, making out the Jungfrau

and her neighbors, and other groups, unable to tear ourselves away, a beautiful rosy flush spreads over their unearthly whiteness; it is the sun's good-night kiss. And then we begin to feel tired, and gladly take the tram home to supper and to our delightfully comfortable Swiss beds.

ON THE BEAUTIFUL LAKE OF THUN

Eager as we are to be off in the morning, we feel that we must wait a few hours to go to the Natural History Museum to see the relief map of the Bernese Oberland and compare it with our flat ones, tracing



THIS PICTURE MAP SHOWS THE ROUTE OF THE HOLIDAY IN SWITZERLAND

on it the valleys and passes we have planned to see, for we mean to go on foot as much as possible. We take, too, a hurried glance at the beautiful crystals from St. Gothard, and at the animals of Switzerland, past and present. And then, having sent on in advance all the baggage we cannot carry, we shoulder our knapsacks packed with necessaries for the night and rush for the train to Thun. All the time we are in the train the wonderful mountains come closer and closer, and when we take the steamer on Lake Thun new beauties are unveiled at every turn as we seem to pass almost under their shadow.

At Spiez we cross the lake, and then all too soon comes the little pier at which we are to land, and from which a mountain railway takes us up a very steep mile. Every moment the view becomes grander and grander. Somehow, we think of Jack climbing the beanstalk and the wonderful country he found at the top as we leave the station and start our walk along the road cut out of the Beatenberg Slopes.

There are woods rising on the left, woods and fields sinking downwards to the lake on the right. The long village of St. Beatenberg straggles along this road for two or three miles, with large hotels, and little shops full of carved bears and other Swiss articles. On and on we go, past the last big hotel, and then up a bit more hill, till we are nearly a thousand feet higher than the village, and have arrived at Amisbühl.

A SWISS MOUNTAIN VILLAGE

All our lives we can never forget our

THE GLORY OF THE ALPINE HEIGHTS



GRINDELWALD VALLEY AND THE WETTERHORN



(2) GOATS ON THE ALPINE SUMMITS



(1) CLIMBING A DIFFICULT PEAK



(2) CROSSING A DEEP CREVASSE



(1) A CRAGGY ROAD OVER THE RIVER AAR



(2) ROAD THROUGH THE ROCK NEAR LUCERNE

These pictures give some idea of the grandeur and variety of the Alpine scenery. The glory of the snowy peaks, the indescribable beauty of the fertile valleys as seen from the lofty heights, the paths and roads over and under and through the solid rocks, are sights never to be forgotten by the traveler who has once seen them.

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week at Amisbühl. From the deep verandah, where we can have all our meals if we like, we look right across Interlaken—the town "between the lakes" of Thun and Brienz—to the glorious mountains that have seemed to call us on all the way from Berne. We can study them from our grand point of view at every hour of the day, in all sorts of weather, and find them always changing in color and beauty. With the telescope we can see climbers like black specks, and many details of the rocks, snow, and ice that make up a snow landscape.



THE ANCIENT CITY OF THUN
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A THUNDER-STORM IN THE MOUNTAINS

The grandeur of it all in a great storm of thunder and lightning makes us breathless. Never have we heard such thunder as this. It crashes and rolls and mutters, and its echoes are tossed back and forth from mountain to mountain. Never has lightning revealed to us such desolation for such brilliant moments! And sometimes, when the mists cover the lake and the town far below, and the valley beyond, we wonder if they can really be there, for we can see nothing below the billowing grey sea. Then, while we are still bewildered, the scene suddenly changes. All below lies in golden sunshine and bright color, and the mists have rolled up and entirely hidden the many mountain-tops.



ON THE LAKE OF LUCERNE
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We get into the habit of waking early to watch from our windows the glories of the sunrise. Each day of our stay we take beautiful walks up the hills, and soon succeed in climbing up the slippery grass slopes, for we have nails in our boots, to see over the ridge to the next valley beyond. Charming white goats come and play with us, and share the salt we have to eat with our hard-boiled eggs; and we get milk in the chalets of the high pastures on which the beautiful brown cows wander, the loud bells fastened round their necks jangling at every step. All too soon the day comes for us to leave. We send our bags on to Mürren, and in the morning we again shoulder our knapsacks and find our way past the haymakers—they always seem to be making hay in Switzerland — and the barns, and the chalets, down and down through the woods for three thousand feet to the lake, and Interlaken — the town between the lakes.

Some of us would fain linger in the town, for the shops are most tempting; but we push on by train up the valley we have looked at so often from Amisbühl, to Lauterbrunnen, mounting all the time, and enjoying the sight of the hurrying, foaming river beside which the railway line climbs up the mountain side, and the ever-changing views of the snow giants, who now seem close upon us. We might take the cable railway and the electric railway up to Mürren, but we decide to make the climb, which we thoroughly enjoy. Part of the way is hot and shadeless, but farther up there are little leaping rivers to cross, besides all the delights of shady, mossy paths, and wild strawberries.

LIFE ON A MOUNTAIN PLATEAU

When we emerge, somewhat tired and heated, on the plateau on which Mürren stands, we feel overwhelmed by the

nearness and immensity of the mountains, divided from us by a narrow, deep valley. What a glow there is upon them this evening! Everyone rushes out from dinner to enjoy the sight for the few minutes that it lasts. And from our window we see the goats come down the lane from the mountains to sleep in the village; we hear their bells in the morning when they start, soon after the glorious sunrise. We spend some days at Mürren, two as wet as wet can be, no view, no fires, no little girls and their mothers at every corner making lace for tourists to buy; but we read up our route, write our letters, and on fine days enjoy our walks all the more for a rest. Such walks! Each day we think we have found a more beautiful one than the last. But the unforgettable one is to the Schilthorn, our first big climb. We go on, up and up, till we come to a dreary valley, all rocks and snow. The sun has melted the snow, and as we cross it we sink in over our boots; but we are well repaid when we come upon a field one blaze of blue, dark blue gentian, pale blue forget-me-nots, and below it a blue, blue lake, and above, over all, the bluest of skies. We have a fine scramble back, to-boganning part of the way, and much enjoy crossing a wide and dashing river on stepping-stones.



SWISS PEASANTS AT BREAKFAST
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THE UPPER GLACIER AT GRINDELWALD
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THE BEAUTY OF WOODS AND WATERFALLS

Then comes another glorious walk. Leaving Mürren early in the morning, packs on back, baggage sent on to Nieder Rickenbach, we take the road for four or five days. We quickly find our way past Gimmelwald, down and down to the head of the Lauterbrunnen valley, and all day long we realize to the full the meaning of its name—nothing but springs. Torrents rush down the steep sides in great leaps, or fall sheer over hundreds of feet; rainbows glitter on the thin veil of mist made by smaller falls, and the path through the woods is ever twisting and turning as if to disclose new beauties at different points.

Presently we find ourselves at the foot of a high cliff, and, lo! there is one of the hotels at Mürren perched on the very top of the height; on the other hand are the steep slopes leading to the Jungfrau mass. Climbing a little way up this slope, we come to the Tummelbach Falls, where the water rushes magnificently through rocky chasms in the heart of the mountain. We stand peeping into these chasms, sheltered from the spray by umbrellas provided by little boys on the spot, and then see the mass of water shoot out in one wild bolt into mid-air, to fall in a rushing stream below. And then, as we pursue our way down the valley, we fall in with a delightful Swiss schoolmaster, who tells us of the school he taught in New York, and of the interest of Zurich, where he lives, till we wish our tour could take that in too. We are astonished at his powers of walking, and have at last regretfully to say good-bye, and see him swing on towards Interlaken, while we must stop at Lauterbrunnen, at the point in the valley where we started

our climb up to Mürren. A bigger climb is now in store for us, up the Wengern Alp and up to the top of the pass of the Little Scheidegg, but we decide to do it by the railway, which winds upwards through meadows and pine-woods, over bridges, and through tunnels.

The views become grander and wider as we go up and up, over the Lauterbrunnen valley by which we have come, and to Mürren and the mountains behind. And then we feel quite bewildered by the overwhelming nearness of the glaciers, and the immense and dazzling snow mountains, now only two or three miles away. We have begun to be familiar with the forms of many others beside the Jungfrau, the Monk, the Eiger, the Silverhorn. We watch the wonderful train with powerful engines as it appears and disappears on its way through tunnels in the Monk, Eiger, and Jungfrau until it reaches far up the Jungfrau. We spend the rest of the day exploring the various points of view, and feel so unwilling to leave this wonderful ridge, whence our onward route can be seen through Grindelwald to the Great Scheidegg beyond, that we stay another day and night on the top, climbing the Lauberhorn, and spending hours drinking in the wild beauty of the entire chain of this Bernese Oberland, which we first saw so distant and ghost-like from Berne.



THE VILLAGE OF GRINDELWALD
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A VISIT TO THE GLACIER AND THE ICE GROTTO

We feel as if we had descended to another world next day when we pass through noisy Grindelwald, with its crowds of tourists and vehicles, shops and hotels, so we push on towards the beautiful three-peaked Wetterhorn, and spend the night in an hotel an hour or so beyond Grindelwald, near the Upper Grindelwald glacier. We visit the Ice Grotto cut out in the thickness of the ice, and find great interest in the blueness of the cracks, and the débris brought down by the ice river and dropped where it thaws, and we cannot resist a trip in the wonderful train by which we mount high in air, as in a lift, and look far over the sea of ice, with its frozen waves and the smiling valley, which forms such a contrast with its beautiful pastures, shut in by bare peaks and dazzling snow. And then, after vainly trying to make friends with a splendid St. Bernard mother and her puppies, we set our face for the pass of the Great Scheidegg, up and up—enjoying the bluebells and the heather, and the little leaping rills, and the colors of the rocks and the sky—and thankful indeed are we for coffee at the inn on the top of the pass, whence we get a farewell view of the giants who have made our lives seem fuller and wider, and the world a nobler home than we have ever realized before.

The descent by the lovely path overshadowed by the Wetterhorn and his companions is quite easy. Now and then we hear the thunder of a falling avalanche and see the light snowflakes dispersing like a white cascade.

We get beds at a sawmill when night overtakes us, and next morning, avoiding Meiringen, we find our way past the Reichenbach Falls through the amazing gorge of the Aar to Innertkirchen.

A good night's rest prepares us for the long ascent of the monotonous Genthal next day. Next morning the mist clears away as we pass the beautiful Engstlen Lake, and the majestic Titlis Mountain comes well into view as the summit of the Joch Pass is reached and we thereafter begin to descend the steep paths towards Engelberg. We rest for the night at the Hotel Hess, where climbers often stay before starting for the top of Titlis. We much wish that we could see the view from there, for it takes in all the Alpine mountains from Savoy to the Tyrol, and away to North Switzerland and South Germany.



A YOUNG GOATHERD

We give but a passing look at Engelberg in its green valley and at the huge abbey, and then take the train down to the valley so famous in Swiss history, leading past Stanz to Lake Lucerne. But our stopping-place is Dallenwil, a little roadside station, from which we mount by a bridle-path for three hours through woods and pastures to Nieder Rickenbach. There is no road for carriages, so the only way to get there, if one's feet are not strong enough, is on mule-back—or to be carried in a chair, like a sedan chair, by two men. The luggage, the food, the furniture, everything has to be thus carried up. We are glad to see our baggage awaiting us, and to settle down for a week to explore the beautiful neighborhood and enjoy the delightful quiet and comfort of the hotel, and the views in every direction. All too soon the day comes when we must start again. We send the baggage to Gersau, on Lake Lucerne, and, with knapsacks once more buckled on, we climb the hill behind Nieder Rickenbach, and from the top look down to the great blue lake below, and to others glittering in the distance; to the Rigi and Pilatus—grand heights, though not snow giants. And then we drop down and down to the lake where we take a steamer across to Gersau, our headquarters for the rest of our holiday. We take many little trips by the steamers, and then climb to spots famous for their views. Our longest and last trip is to the very end of the lake, and then by train to Goeschenen, by the railway so wonderfully engineered, rising by circular loops and tunnels to the levels required. As we have always longed to go in a real Swiss coach, which looks like three carriages built into one, we take the Ober-Alp coach from Goeschenen. We get a glance into the black mouth of the tunnel that pierces the heart of the great central mountain mass of St. Gothard, rumble over the Teufels Bridge, and past the interesting fortifications which guard the passes. We meet the soldiers returning from their practice in carrying guns in pieces on mule-back up the steep hills—all for defence, not attack. And the coach with its five horses rattles on past Andermatt, then up and up by zigzag roads, backwards and forwards dozens of times. The view as we look back becomes more and more magnificent, and at last the lake at the top of the Ober-Alp Pass is reached. Then we scramble down, rather stiff, to stay the night at the little hotel. The horses now have a descent as steep and long as the ascent we have just made, to the lovely



A MOUNTAINEER WITH A CAPTURED EAGLET

Val Tavetsch, through which the infant Rhine starts on his long journey to the distant North Sea. It is to see his very beginning, for we are Rhine lovers, that we have come to the Ober-Alp; so the disappointment is great next morning when we find it raining hard. However, we decide to try, and we do a stiff bit of climbing to within five minutes of the little Toma See, or lake, called the "source of the Rhine." Then suddenly there sweeps down upon us a thick mist, which wraps us round with cold, wet arms and blots out even the rocks and trees that are nearest. So there is nothing for it but to beat a hasty retreat, walking as carefully as we can. We dry ourselves at the hotel, and take the coach back to Goeschenen and thence back to Gersau, to find the lake a mass of glittering purple and gold under a stormy sunset. Two pouring wet days help us to feel less unwilling than we were to leave the beautiful holiday country, already withdrawn from our eyes under a mantle of grey mist; and so we start in the steamer from Gersau to Lucerne. For, in any case, we could not leave without at least a glance at Lucerne. Fortunately, by next morning, the weather clears, and we can walk on the quays under the chestnuts, and enjoy the views on the lake, the pleasant bustle, the rushing green torrent of the Reuss as it pours out of the placid lake. The old bridges with roofs interest us much, also many beautiful old houses, with their signs hanging out, as was the custom in the Middle Ages. We see, too, the famous dying lion hewn out of the rock, his paw sheltering the lilies of France; and we recall the tragic story and the bravery of the Swiss Guards who defended the Tuileries to the death. Some of us would like to linger long among the tempting shops—for presents to take home in the shape of silver jewelry, painted ivory flowers, and the ever-charming carvings made by our little brown friends at Berne. But, as usual, there is a view that must be seen. Electric and cable tramways take us quickly to the Sonnenberg, a height behind Lucerne, where we spend a lovely afternoon saying good-bye to the lakes and mountains which we have learnt to love so well. Then comes the final start, from Lucerne, for London, and as we go we make plans for another year — plans for seeing the Holbein drawings at Basel and the old houses at Lucerne, for continuing the journey in the Ober Alp coach, and perhaps for trying again to see the source of the Rhine.



(2) A VILLAGE STREET



(1) THE VILLAGE FOUNTAIN



(1) A SWISS REAPER



A GIANT ALPINE HORN



(2) A LITTLE LACE-MAKER

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CONTINUED ON PAGE 5925.



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THE ALHAMBRA, SPAIN

THE GLOOMY KING OF SPAIN

CONTINUED FROM 5791



NO more unhappy man ever sat on a European throne than Philip II. of Spain, the son of the emperor Charles V. Philip began his life with high hopes and great ambitions, but before he died all his hopes were broken, and his ambitions lay in ruin. When he began to reign, he had such revenues as no monarch before him had ever had; his armies were composed of the pick of the world's soldiers, led by brilliant generals, and he had a splendid navy. He lived to see his kingdom heavily burdened by taxation, his armies defeated, and his great navy utterly destroyed.

He was naturally cold and proud. His education helped to increase these defects, and he grew up to be gloomy, suspicious, and intolerant, and consequently he led a very sad and lonely life. Though he never said, "I am the state," he believed that he was. He believed that a king could do no wrong, and that he had the right to compel all his subjects to think as he did. Moreover, his father taught him to distrust even his own counselors, and he therefore followed his own judgment, when perhaps the counsels of others might have guided him into happier courses. He thought it was necessary for the well-being of a state that all the people should worship God in the same way, and that his way. Though he was perhaps not really cruel, these beliefs led him into acts of cruel intolerance, and wars of bitter persecution, which left a stain on his good name, and brought about the impoverishment of his country.

When he was a young man, he married his cousin, Princess Mary of Portugal, but his wife died when their little son was only a tiny baby. After a time, to please his father, he married another cousin, Queen Mary of England, though he did not love her. He and his father hoped that this marriage would bring England under the dominion of Spain, but their hopes were not fulfilled. The English people disliked his cold, haughty ways, and though they did not love the queen, they resented his neglect of her. Though some historians say he was not to blame, the people believed that Mary's religious persecutions were partly due to his

influence. When Calais was lost in the war with France, into which Mary plunged England at his persuasion, their dislike grew to bitter enmity.

In 1555, the emperor decided to give up all his power and go into a monastery. His brother Ferdinand, as we have read in another part of the book, was made emperor, but Philip succeeded to the kingdom of Spain, to Sicily, Naples, and the duchy of Milan in Italy, to the duchy of Burgundy, which included Holland, Belgium, and Franche Comte, and to the rich Spanish possessions in the New World and the East Indies. It was a magnificent heritage, but Spain was then very powerful, and if Philip had been a great man, he might have founded a greater empire than the world has ever seen.

Philip's War with the Netherlands

It is said that when Charles presented Philip to the Estates of the Netherlands as their king, and said farewell, they wept. They soon found that they had cause for their tears. Large numbers of the people had embraced the doctrines of the Reformation, and Philip tried to turn them back to their old faith, but they refused to obey. He then sent a large army to enforce his wishes, and began the persecution of which we read in the story of Belgium and Holland.



THE ESCORIAL PALACE, NEAR MADRID

Queen Mary of England died a few years after her marriage to Philip, and as they had no children, she was succeeded by Queen Elizabeth. Philip still tried to keep his influence over England, but failed. He would have married Elizabeth if he could, but even if she had been willing, she knew that a marriage with him would probably rouse the people to rebellion. After that he married a French princess, Elizabeth of Valois, whose son succeeded him.

The Destruction of the Armada

The persecution in the Netherlands greatly added to the enmity of the English people, and they became Philip's most dangerous foes. English ships began to prey on the Spanish-American colonies, and on Spanish commerce with the West. Many a good ship laden with gold and silver from the Spanish Main never saw her home port again. Philip tried to retaliate by giving his support to plots to put Mary Queen of Scots on the throne of England, but he did not succeed. Mary was executed, and Elizabeth sent troops to aid the Netherlands against him. He had already claimed the kingdom of Portugal through his mother, and had conquered that country. Now he determined to do the same with England. He said he had a better right to the throne than Elizabeth, because he was descended from John of Gaunt. With the combined fleets of Spain and Portugal, he prepared a great Armada to invade England and enforce his claim. But the Armada was defeated, and, as they fled from the English fleet, his ships were smashed on the rocky coasts of Scotland and Ireland.

The Victory over the Turks at Lepanto

One really bright spot in Philip's reign was the great victory over the Turks at Lepanto, of which we read in another place, but on the whole it is a dreary story of mismanagement, for which he was himself almost entirely to blame.

The Building of the Famous Escorial

In Spain, Philip's great and lasting monument is the Escorial, a great building about twenty-five miles from Madrid, which was erected to be a palace, a monastery, and a tomb all in one. Charles V. had urged upon his son to provide a suitable resting-place for his remains, and when Philip won the great battle of St. Quentin against the French in 1557 he vowed to erect a great monastery and palace where his father's bones should rest, and to dedicate it to St. Lawrence.

The Escorial was designed in the form of a gridiron, because St. Lawrence is said to have perished by martyrdom upon a gridiron. The plan is certainly the strangest of any great building in the

world, and we cannot say that it is beautiful. Fabulous wealth was expended upon it, and it was not without reason that the Escorial was called in Spain "the eighth wonder of the world." For thirty years Philip devoted most of his spare time to visiting the mountains north-west of Madrid, where, 2,700 feet above the sea, he had selected an almost inaccessible site for his monastery-palace. There he would sit or stand and watch the great palace gradually rising, as thousands of workmen built up the massive walls. In order to judge the effect from a distance, Philip would climb to a rocky

Upon the decoration of the Escorial, and in pictures for its walls, Philip spent an enormous amount of money. He employed Titian and all the most famous Italian artists of the day, and some of their most brilliant works were the results of Philip's patronage. He was a gifted art critic himself, and was most exacting in his requirements, so that some of the artists had to do their work over and over again before they could satisfy the king. One of them, Zuccaro, who had been greatly overrated, failed to satisfy him at all, and he was dismissed and sent back to his own country. But Philip



PHILIP II. SEATED ON THE ROCK FROM WHICH HE WATCHED THE BUILDING OF THE ESCORIAL

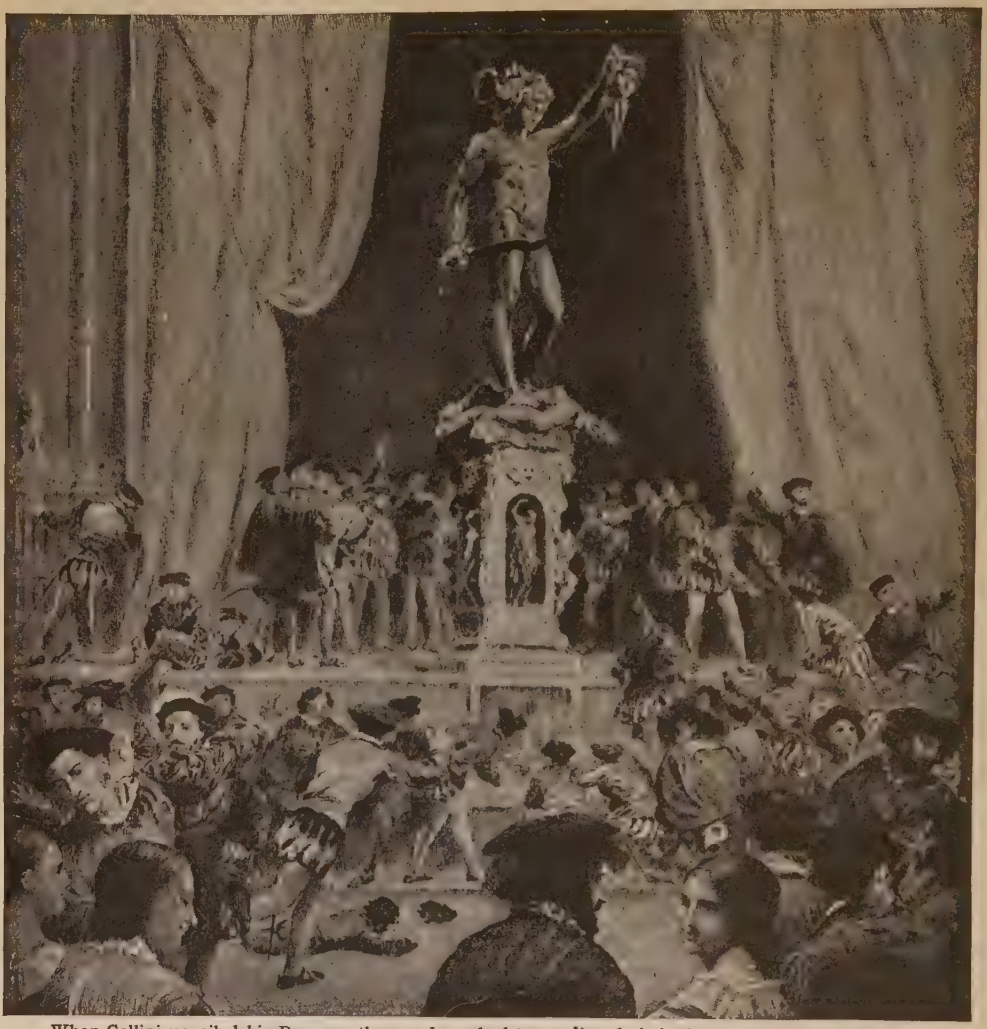
crag a mile or more from the building, and in a kind of natural chair formed by the granite-like rock, which ever since has been known as "the king's seat," he would sit for hours, with a spy-glass, gazing upon the wonderful palace that was being erected.

To this spot the monarch used to repair, taking with him his secretaries and his papers, and from there he kept up a correspondence with the different parts of his great empire. A writer of that period tells us that he did four times the amount of work there that he did in the same number of days in his capital. Philip himself used to boast that, thus hidden from the world, with a little bit of paper, he ruled over both hemispheres.

always treated his artists generously with money, and when this unlucky painter was sent away he was paid a large sum, in addition to a handsome salary for the full length of time for which he had been engaged.

"It is not Zuccaro's fault," said Philip; "it is the fault of the persons who brought him here." The king would sit for hours watching the artists at work, offering occasional criticisms and talking familiarly with them. In fact, it has been said that in the presence of this great building Philip's nature appeared to expand.

When the palace was far advanced, after the building operations had been going on for fourteen years, it was one night struck by lightning, and a fire broke



When Cellini unveiled his Perseus, the people rushed to see it and vied with one another in its praise.



Cellini defending the Castle of St. Angelo during the sack of Rome in 1527 by the French.

out that came near to destroying it. Philip watched the fire with great anxiety, but at last it was subdued. The building was completed twenty-one years after the foundation-stone was laid.

The Escorial has lost its ancient glory —if such a gloomy place could be said to have a glory—and is no longer inhabited, except as a monastery and school.

When it was finished the Escorial was more than half a mile round, and had no fewer than sixty-eight fountains playing in its halls and courts. It has twelve thousand windows and doors, and the keys of the doors weighed more than half a ton. Philip died in the Escorial palace in 1598, and his remains lie buried there.

THE LIFE OF BENVENUTO CELLINI

CLEVER men are not always great men, and we must not be disappointed to find that Benvenuto Cellini, the famous sculptor, goldsmith, and engraver, who lived in the time of Charles V. and Philip II., has to be added to the list of talented men, who did not live good lives. He was an extraordinary man—at the same time extraordinarily clever and extraordinarily wicked.

Cellini was born in the year 1500, in Florence, when that city republic was still a great centre of art and learning. His father, Giovanni Cellini, who was a maker of instruments and a flute player, wished Benvenuto to be a musician and had him taught music. Benvenuto, however, loved drawing and metal work, and when he was fifteen, persuaded his father to let him become a goldsmith. He went to a man named Antonio Marcone to learn his craft, but his apprenticeship did not last long. He and his younger brother were quarrelsome youths, and when he was only sixteen, the magistrates banished them because his brother had wounded a companion in a street fight.

He was back in Florence in six months, and was sent to Bologna. There he worked for a year, and then went home, but soon ran away to Pisa, because his good father had offended him. At the end of a year he went home again, but before long ran away to Rome because of another dispute with his father. In two years, however, he returned to Florence, but was again obliged to leave to escape punishment for a quarrel, and went back to Rome.

CELLINI ENTERS THE SERVICE OF THE POPE

By this time he had reached manhood, and, though he was still young, he was already known as an almost unrivaled master of his craft. A beautiful silver vase, which he made for the Bishop of Salamanca, brought him to the attention of Pope Clement VII., who gave him many commissions. The favor of the Pope, together with the beauty of his work, brought him plenty of employment, and he became prosperous, and was able to send help to his father. He lived in Rome for a number of years, and his life there, as elsewhere, was full of adventure. He had a furious temper, over which he held no control, and he thought little of fighting with, and wounding, or killing anyone who offended him. At one time, his behavior was so bad that the Pope ordered one of his officers to go and hang him on the spot, and not to appear at the Vatican again until he had done so, but the storm blew over, and he was taken into favor again.

In 1527, Rome fell into the hands of a French army, and even the castle of St. Angelo, in which the Pope had taken refuge, was in danger of being taken. Cellini took part in the defence of the city and castle. He said that he killed the Constable of France, and wounded the prince of Orange, and claimed that but for him the castle would have fallen. All this may not be quite true, but he was a good soldier, and there is no doubt that he fought bravely.

After the siege was over, he went to Florence to see his father. From Florence, he went to Mantua for a time, and then returned to Florence, but war broke out between the Pope and Florence and, as his father had died, Cellini returned to Rome.

HIS IMPRISONMENT IN THE CASTLE OF ST. ANGELO

Some time after this, Pope Clement VII. died, and was succeeded by Pope Paul II., who also held Cellini's work in high esteem. But Cellini had a powerful enemy who, in 1537, had him imprisoned on a charge of theft. He escaped from the castle of St. Angelo, but was re-

captured, and was put into a horrible dungeon where he was kept for some time in constant fear of death.

After a time he was released, and then he left Rome and went to Paris, where he was received with great honor. The king, to whom he had already paid a visit, gave him many commissions for which he was well paid, and a castle in Paris to live in. But in 1545, when he was at the height of his powers and his fame, he left France and went back to his native city. He had some difficulty in leaving the country, for he was accused of carrying off some of the king's silver, and had to give up three beautiful vases that he was taking with him, but he succeeded in getting safely away.

After that, he lived in Florence until his death in 1570, and did some of his most important work there. Among other things, he was employed by the Duke of Florence to help in strengthening the fortifications, in the war with Siena, when the duke feared that the city might be attacked. It was also during this second part of his life that Cellini made his famous bronze statue of Perseus, which still stands in the Loggia di Lanzia in Florence.



CELLINI PRESENTING A VASE TO THE POPE

CELLINI'S STORMY AND ADVENTUROUS CAREER

We know of no artist who had so stormy a career as Cellini. In our days, his violence and strange conduct would not be endured; but in the age in which he lived, the excellence of his art made him welcome wherever he went. Even princes of the church were glad to employ a genius who did everything to the best of his ability, who could make for them the finest statuary and goldsmith's work, who used precious stones and precious metals, enamels, bronze and steel with equal readiness, and heightened the beauty of his work with a richness of fancy which no one in his time could rival. And his life was not all bad. He was good to his father, though he quarreled with him. He loved his brother, and went back to Florence to undertake the support of his sister and her six daughters.

It is said that when he was nearly sixty years old, he had serious thoughts of becoming a monk, but he soon gave up the idea. Some people say that he afterward married, and that when he died in 1570, he left two little children, but others say that he never married at all.

At the end of his life he began to write his story, and the book that he produced is valued by grown-ups even more than his work as an artist. It is not a book which would interest young people, but to older people it is a wonderful piece of work.

Some of his tales we know are twisted to glorify himself; but, in spite of its extravagance, his book gives us a most vivid picture of his age. Everything of historical value that Cellini tells us is only a background for himself. Still, the book is valuable, as no other work of the age is, and it is one of the great classics for all time.

In his art, Cellini was a stormy enthusiast. He believed greatly in himself. If anybody said that he could not do a thing, he simply did it, not only because he loved his art, but because he loved still better that Benvenuto Cellini should prove wiser or more skilful than his critics or patrons. A famous incident in his career shows us the man as he was.

When Benvenuto promised to make a

statue of Perseus for the Grand Duke of Florence, he prepared an exquisite model in wax, and presented it to the duke, who exclaimed:

"Benvenuto, this statue cannot be cast in bronze; it is not in the power of your art to compass it."

Again and again the duke tried to discourage the sculptor from attempting an impossible task; but Benvenuto's soul was set upon the achievement.

He laid in a great store of pinewood, and when his molds were ready, filled his furnace with materials for his bronze. Almost as soon as the pinewood was lighted, the flames sprang up to the roof with a roar, and in a few minutes the shop was ablaze. While the frightened workers knew not what to do, a storm of rain drove in from another quarter,and cooled the furnace. So hard did Benvenuto struggle against these trying accidents that he was stricken down with illness, and went to bed, expecting to die before morning. All the time he lay in bed he was crying out aloud:

"I am dying! I am dying!"

While he was in this parlous state a workman entered hurriedly, saying:

"Alas, poor Benvenuto, your work is spoiled, and the misfortune admits of no possible remedy."

The metal in the furnace had caked.

Cellini sprang from his sick-bed, rushed to the shop, and sent for fuel.

"Give your orders," said one of his men, "and we will all second you in what you command; we will assist you as long as we have breath in our bodies."



A SALT-CELLAR MADE BY CELLINI



BENVENUTO CELLINI IN HIS STUDIO

The new wood burned up, and the metal began to brighten.

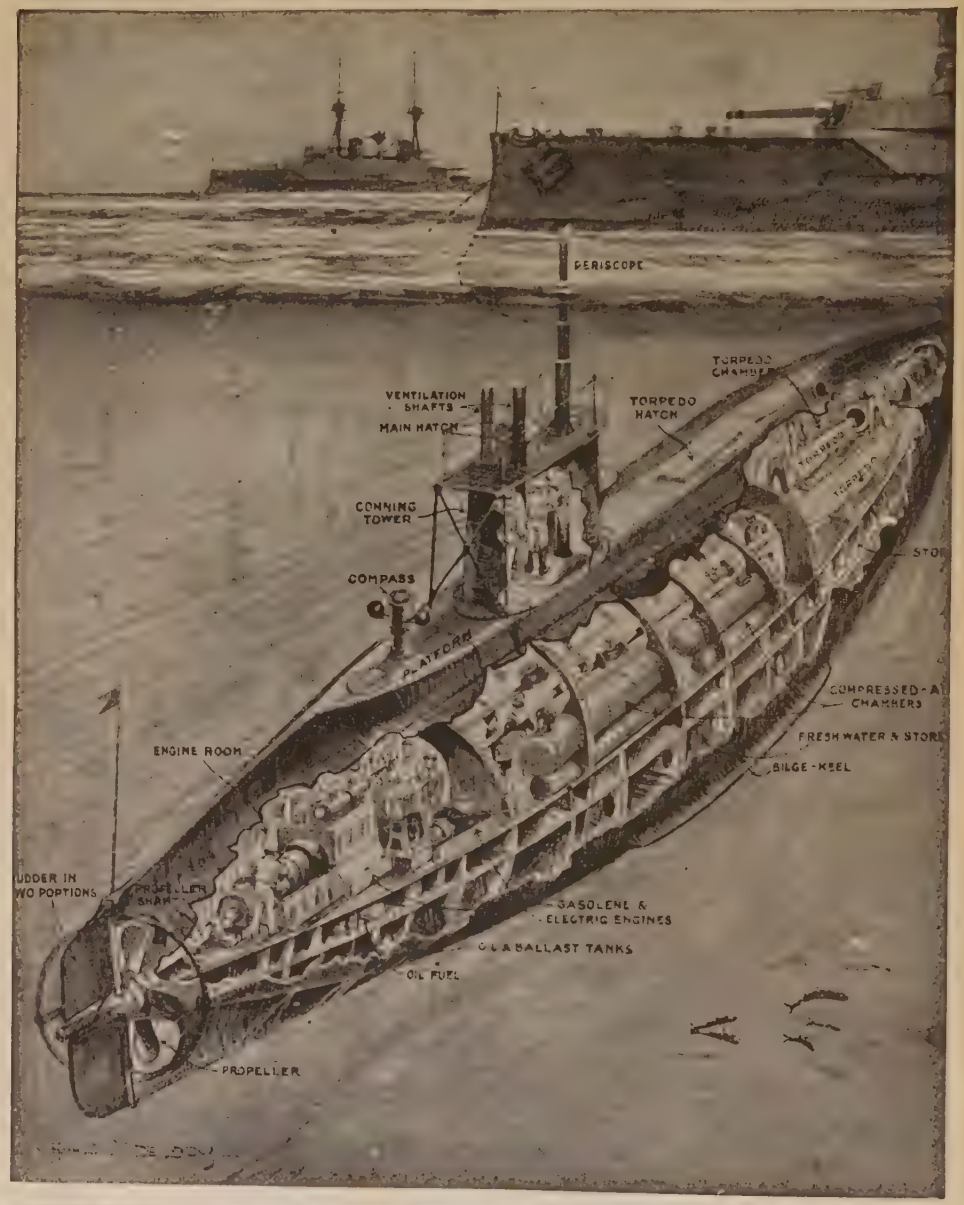
Benvenuto sent men to the roof to look after the fire, which had acquired new force. Towards the garden he had placed some tables,with pieces of tapestry and old clothes, in order to shelter him from the rain. He was continually shouting to his men, and bestirring them.

"Then," said he, "I caused a mass of pewter, weighing about sixty pounds, to be thrown upon the metal in the furnace, which, with other help, as the brisk wood fire, and stirring it sometimes with iron and sometimes with long poles, soon became completely dissolved. Finding that, contrary to the opinion of my ignorant assistants,I had effected what seemed as difficult as to raise the dead, I so recovered my vigor that I no longer perceived whether I had any fever, nor had I the least apprehension of death. Suddenly a loud noise was heard, and a glittering of fire flashed before our eyes, as if it had been the darting of a thunderbolt. Terror seized on all present, and on none more than myself. This tremendous noise being over,we began to stare at each other, and perceived that the cover of the furnace had burst and flown off, so that the bronze began to run."

But the metal did not run fast enough, and, fearing that some had been lost in the explosion, Benvenuto ordered all his dishes and porringers of pewter to be thrown into the furnace. Then the metal ran freely, and the statue was cast.

CONTINUED ON PAGE 5935.

A SHIP THAT GOES DOWN IN THE SEA



A SUBMARINE ABOUT TO FIRE A TORPEDO, AND A SECTION THROUGH THE CRAFT



A Flotilla of Submarines Running Awash.

THE SHIP BENEATH THE WATERS

CONTINUED FROM 5799

MOST boys delight to read the books written by the famous French writer, Jules Verne, who died a few years ago. You can find some of his stories in THE BOOK OF KNOWLEDGE. He wrote scientific tales describing marvels which, at that time, nobody thought would be achieved. In 1873, he wrote a fascinating tale called "Twenty Thousand Leagues Under the Sea." That, in his day, seemed as impossible as the rest of his tales. To-day it is no longer impossible. Several nations have a number of ships in their navies which, if they cannot travel 20,000 leagues under the sea, can travel beneath the waves almost as easily as they can travel on the surface.

As long ago as the War of the Revolution, an American, David Bushnell, invented one of these ships. It was made of wood, with a magazine behind containing explosives. In this little boat the daring Sergeant Lee went right under the bows of the British ship Eagle and attached the magazine to its hull. The mine was not properly fastened, however, and exploded in the water about an hour after.

Another famous American, Robert Fulton, who built the Clermont, a little later offered Napoleon a submarine for his invasion of England. During the Civil War in the United States, experiments were made with submarine boats. Later, John P. Holland and Simon Lake, both Americans, made improvements, and submarines became real weapons of war. Now all navies have large numbers of them.

All of us know what these submarines are like. They are singular-looking vessels—long, shaped something like a cigar, but flat on the top to afford standing place for the officers and men. In the middle of the deck is a little tower, called a conning-tower, and this is the only way into the boat for the crew. The observer notices also, rising from the vessel, something which looks like a tiny lighthouse, or perhaps there are several of these curious things.

Of course the submarine has engines to make it go, but these are usually driven, not by steam, but by oil engines. Its speed is much faster on the surface, where it can use these powerful engines, and the boat spends most of the time on the surface, diving only when necessary. When it is under the water, it depends on storage batteries which drive electric motors, as the fumes of the oil would be harmful to the crew. The submarine is really

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made for attack. In defence it is helpless, unless it carries guns on the deck. The barest touch of a ship's hull will rip open its shell, and send it to the bottom. As its only refuge is the sea, and as it can live only by stealth, it must have driving power that is noiseless and leaves no trace behind it. The electric motor is practically noiseless and heatless, and leaves no bubbles. The boat has the ordinary propeller, and the ordinary rudder to steer it, but it also has two other rudders, which work, not vertically, but horizontally, to make the ship dive down or come up.

Still, even with diving rudders of this sort, we cannot by any ordinary means make a floating vessel keep under water, so we have to increase the weight of the vessel. Valves are therefore opened in the submarine, and through these the sea-water rushes in and fills tanks built to receive it. When sufficient water has been taken in to make the vessel sink to a certain depth, the valves are closed, and then the boat works along under water at eight to twelve miles an hour.

Inside the ship there are from fifteen to thirty men, brave fellows all. They must remain in this ship under water, where no air can reach them. The ship carries compressed air, which is released a little at a time, from special chambers, while the air which has become foul from having been breathed, is, like the exhaust gases from the engine, driven out of the ship. The men may have to stay for hours and hours under water. They have supplies of food, water and oil to last for many days.

WHAT THE DEADLY TORPEDO IS LIKE

The chief weapon of the submarines is the torpedo, though large vessels of this kind now carry guns on the deck. The torpedo itself is from fifteen to twenty-two feet long, and from fourteen to twenty-one inches in diameter. How is the torpedo shot out without allowing the water to rush in? The torpedo tubes are in the bow of the ship, and each has a water-tight door at each end. To put the torpedo in position the men open only the inner door. When the missile is placed they close the inner door and open the outer one, ready for firing. The torpedo, which is pushed out by compressed air, is itself like a small submarine. It has propellers and engines to drive it, a steering rudder, and diving rudders to keep it at the right depth. But there is no one aboard to guide it, so it must be self-acting. The torpedo is also driven by compressed air, and there is a device which prevents the pressure of the air from falling off, and so keeps up the speed of the terrible missile. A torpedo can travel four times as fast as a submarine, so that a modern one has a speed for a short range (up to 2,500 yards) of forty or fifty knots or sea miles, an hour. The torpedo is seldom aimed straight at its mark of course, for allowance has to be made for the speed of both the submarine and its victim.

Have you ever wondered why the torpedo waits to explode till it strikes a ship? The head of the torpedo is filled with some very powerful explosive, and at its nose is a projecting pin which, if driven forcibly inwards, will explode the contents of the head. To prevent the pressure of water from exploding the torpedo as it travels along, there is a little wheel, similar to those you see on the front of motor cars. By the time the torpedo has reached its journey's end, this wheel has spun so that it unscrews and no longer locks the firing pin. The shock as the torpedo strikes the ship is all that is necessary to cause a mighty explosion.

THE UNSEEN DANGERS OF THE DEEP WHICH THE SUBMARINE MUST FACE

The men in a submarine beneath the water cannot see what is taking place on the surface of the sea. It is possible for the officer who stands in the tower, which generally projects out of the water when the ship itself is only just under the surface, to observe what is happening on the surface of the sea; but if the submarine is traveling at a greater depth there can be no lookout in the tower.

But a clever inventor has overcome this difficulty. He has given to the crew of the submarine a wonderful eye by means of which they can see what is going on at the surface of the waters, though all the rest of the boat is under water. When the submarine is submerged, this wonderful instrument shows the commander what is happening in the world above, for as great a distance as thirteen miles all around. What is the marvelous instrument that gives him this power, as though he had a third eye? It is called the periscope, a word that comes from the Greek word *periskopein*, to look around. It is an instrument that looks around. We can understand how

THE SHIPS THAT FIGHT UNDER THE SEA



Years ago a ship that could travel under the sea was a mere dream of the storytellers, but to-day every big navy has its fleets of submarine vessels, and they are familiar objects at all our naval ports. Here we see a type of the modern submarine, a large and swift vessel, that can sink a battleship, while itself keeping out of sight.



This is an earlier and smaller type of submarine boat, known, from the name of its inventor, as the Holland type. The vessel is traveling at full speed while half submerged, and members of the crew are standing on deck. If necessary, the boat can sink beneath the waves and completely disappear from sight in two or three minutes.



Here we see another type of submarine, with only its conning-tower visible above the water. It is about to take the final plunge beneath the waves, with its crew of sixteen officers and men, who, in actual war, can then do their deadly work unseen by the enemy. The conning-tower has a steel lid to resist the pressure of the water.

it works by looking at the pictures on these pages.

THE WONDERFUL EYE OF THE SUBMARINE THAT CAN SEE ALL ROUND

It looks like a small lighthouse, but instead of shedding forth light to enable people outside to see, it brings the pictures of outside objects inside. The periscope is a long tube that projects from the submarine above the surface of the sea. Near the top is a lens. This is the eye of the submarine. There are different kinds of periscopes. In the one in the picture on page 5863, the image is reflected down the tube, on to a flat surface below. The officer and crew of the submarine, by looking at the flat surface upon which the images of things above are reflected, can see what is happening all around them.

In the more common periscopes only the commander or observer looks through an eyepiece upon the reflected picture. There are horizontal and vertical marks on the mirror, by which the commander can estimate how far the enemy ship is from him, the rate at which it is going and the direction of its course. During the Great War many ships were painted in queer ways in order to deceive the submarine commander, and often succeeded. It is claimed that the first periscope ever used in war was made by one Thomas Doughty, an engineer in the United States Navy. During the Civil War, gunners from the high banks of a river were able to get the range of the ships below, and to do much damage to them and their crews. Finally, Doughty made a rude periscope, by which he was able to see the enemy gunners on the top of the cliff, and signaled their whereabouts to his own crew and to other boats. During the Great War, soldiers in the trenches found periscopes valuable.

A THRILLING EXPERIENCE ON ONE OF THE UNDERSEA CRAFT

When the submarine is submerged it is blind, and deaf but for an instrument called a microphone. By electrical means, this magnifies sound waves which are traveling through the water, and the commander can pick up the noise of a surface propeller, or submarine signals. Some submarines also carry wireless apparatus.

On one occasion a submarine left its base, or station, and was traveling under water with its periscope just above the surface. The commander at the periscope saw a small steamer steering a course behind his ship. At the same time his sounding apparatus told him that a screw steamer was near. Then the periscope was lifted a little higher in the water, and he saw a flotilla of five torpedo boats steaming near. He increased the speed of his boat and sank deeper, meaning to attack. Just as he was about to take aim, the boat began to roll in a curious way, and to rise and sink by turns. In a little while the commander discovered that his boat was entangled in a wire netting let down by the hunters.

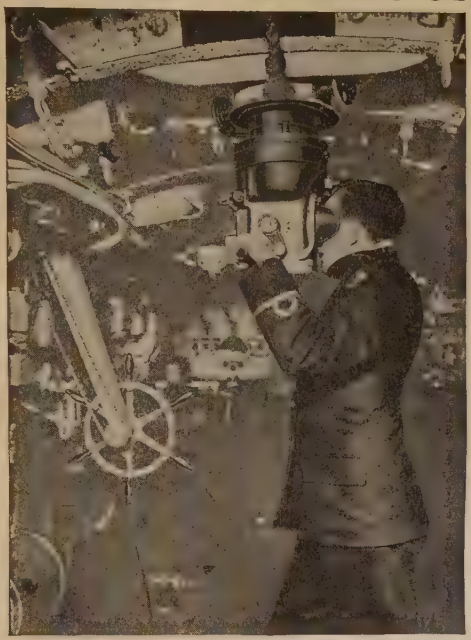
By the pressure gauge the commander can tell to what depth he has sunk. It has an open end which passes out to the sea, and the deeper down the submarine goes the greater is the pressure of water on it. As the pressure is always the same for the same depth the gauge is marked off, and by looking at the dial the commander knows exactly to what depth he has taken the boat. A submarine cannot lie still at one depth, but must keep on the move or rise to the surface. It could anchor at any given depth but this would be inconvenient. The only time when it is stationary under water is when it goes to sleep at the bottom.

MEANS OF DEFENCE THAT HAVE BEEN ADOPTED AGAINST THE SUBMARINE

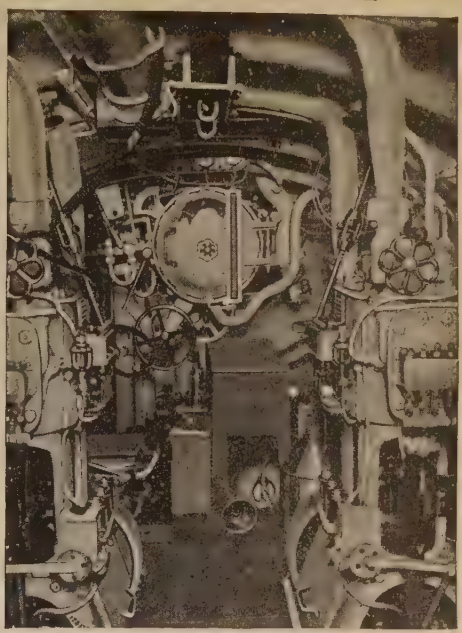
The submarine plays a game of hide-and-seek, on and under the surface of the waters. And the hunter has to take his chance of catching the elusive little diver. The best and most effective method of reducing the number of these little boats has been to have something on the spot to strike them when they appear. Fleets of destroyers and "submarine chasers" have become a necessary part of every great navy. The largest have a speed of nearly double that of a fast submarine on the surface, and are equipped with quick-firing guns. If the submarine submerges before it is hit, the boat will drop a bomb or bombs set to explode at a fixed depth of water. If the submarine is anywhere near the bomb it is likely to be destroyed by the explosion. These "depth bombs" were the worst enemies of the German submarines. Aeroplanes and balloons are useful for sighting undersea craft, because when the surface is calm they can get directly over the spot and look into the water.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5875.

THE WONDER OF THE SUBMARINE



Here we see an officer looking through the periscope of a submarine though the boat itself is submerged. Perhaps he is watching the approach of a battleship. The tube may be turned in any direction.



The submarine is a very delicate machine with a bewildering array of wheels and levers. The round object in the centre of the picture is the inner door of a torpedo tube. This is a very rare picture



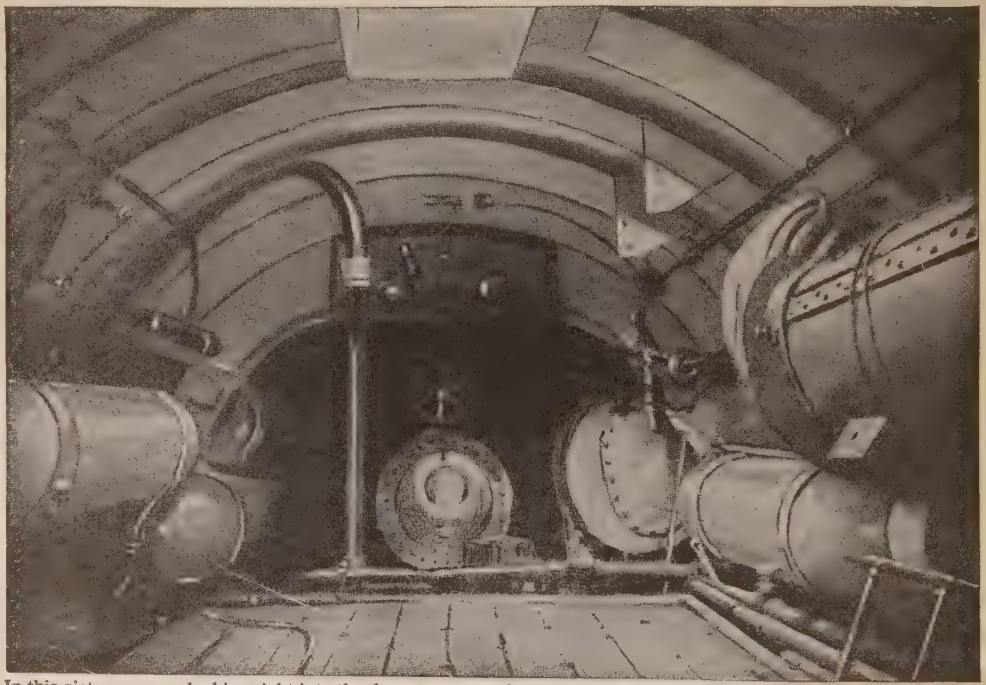
Before the United States entered the Great War, the German merchant submarine Deutschland made two trips across the Atlantic, and brought in valuable cargoes of dye stuffs and other goods of high value in small bulk. Though the boat made the trip successfully the amount of cargo space is so small that such boats cannot be used to advantage.

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A FIGHTING SHIP BENEATH THE WAVES



This is how the crew of a submarine use their deadly weapons as they attack an enemy. They are just firing a torpedo from the forepart of the vessel, and this, if well aimed, may sink some mighty battleship that has cost, perhaps, ten million dollars. The men appear to be cramped for room, but on a submarine every inch of space has to be used with the greatest economy. The legs of the commander can be seen on his platform.



In this picture we are looking right into the bow, or nose, of the submarine, and in the centre is the tube through which the torpedo is sent on its deadly journey. To the right and left are large tanks of compressed air. This is needed for breathing purposes, and to fire the torpedoes. Submarines carry from six to twenty torpedoes, each capable of sinking a huge battleship, although many of them miss their mark and are lost, due to faulty aim.

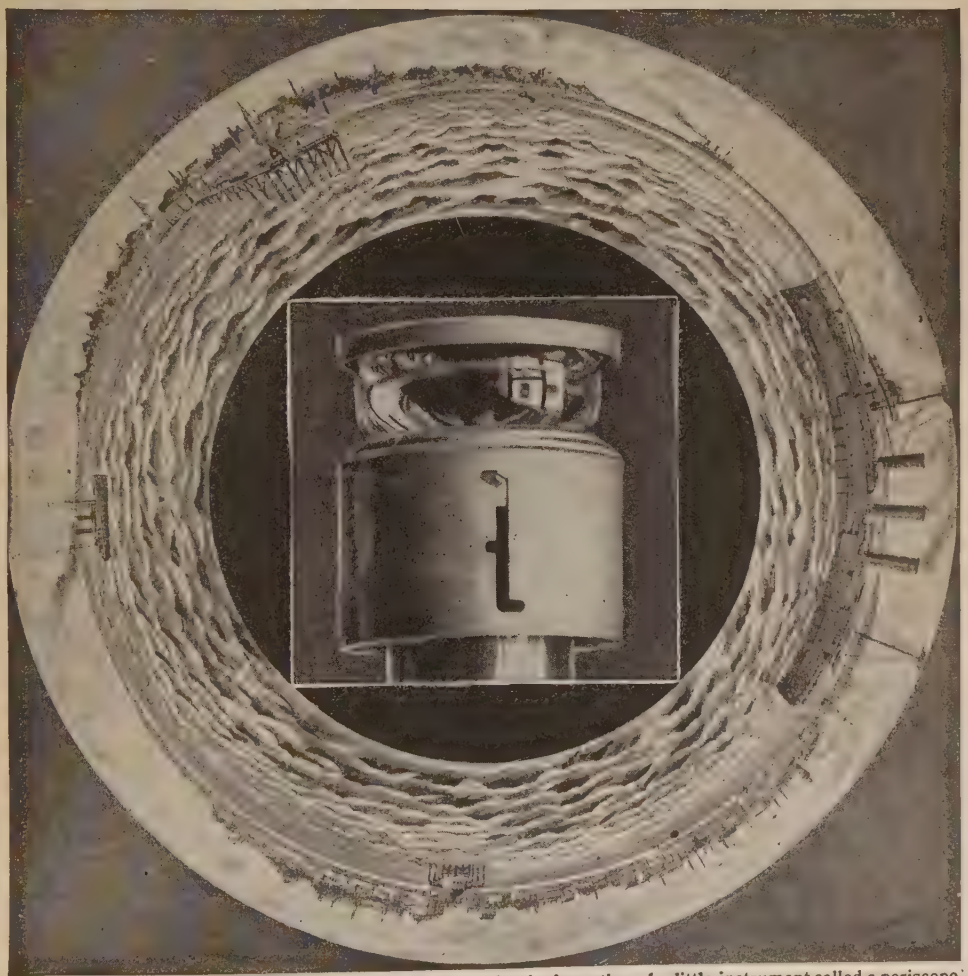
THE WONDERFUL EYE OF THE SUBMARINE



This officer is watching the manometers, the instrument which tells whether the air in the submarine is pure enough for the crew to breathe with safety.



The sailors in this picture are launching a torpedo on its journey of death beneath the sea. Nothing can resist this terrible instrument if it once hits its mark



The dangers of being in a submarine have been reduced by the invention of a little instrument called a periscope, with one or two of which all submarines are fitted. This enables those in the submarine to see what is happening around them in the sunlight away above their heads. The periscope is the wonderful eye of the submarine. It is a long tube with an arrangement of mirrors at the top. One kind is shown in the centre picture. This catches a view of the scene, and reflects it on a table below. Most periscopes show only part of a circle.

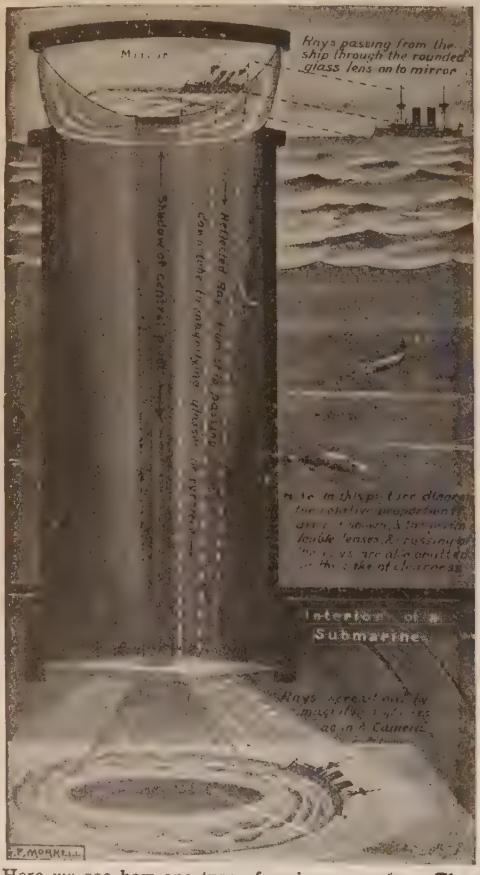
LOOKING OUT ABOVE AND BELOW THE WAVES



Here the officers are studying the picture which the periscope has reflected, somewhat in the same way as a picture is thrown on the sheet by a magic lantern.



This picture is taken just before sinking. Air supply in a submarine is maintained by air-compressors. Formerly, white mice were kept to indicate if the air got foul.

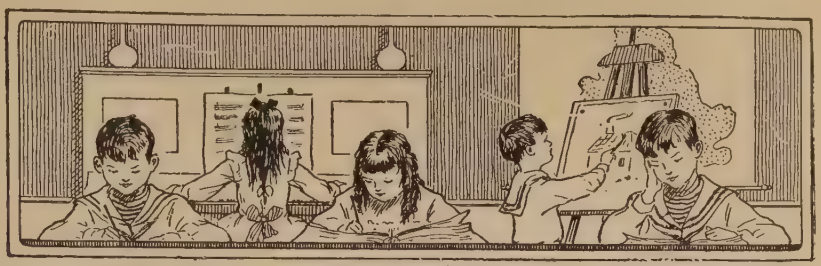


Here we see how one type of periscope works. The ship on the waves is seen by the lens of the periscope, and the picture is reflected down the tube on to the table.



This picture of the conning-tower and the apparatus on deck shows the massiveness of the modern kind of submarine. Larger types are constantly being built.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5875.



READING

FOREIGN WORDS AND PHRASES

CONTINUED FROM 5671

IN written and spoken English many words and phrases are used that are not English at all. A great number of such words and phrases are used because they express the meaning of the writer, or speaker, better than any English words or phrases that he could use. Examples of this class are *chic*, *de trop*, and *ad libitum*. Others are legacies from the time when our laws were composed in Latin, such as *ad referendum*, and many Church phrases have come to us from the time when the language of the Church was Latin, like *Dei gratia*. Others, such as *et tu Brute*, were the sayings of famous men upon memorable occasions. For whatever reason they have come to be used in speaking or writing in English, they are interesting as showing how language grows, and how one language borrows words from other languages. A very large part of the recognised English language has been borrowed in this way from French and other sources, and, unless we study the subject very closely, we are liable to forget that these words originally were anything but English. We should try to understand all that we read, and the following table explains the most familiar of the foreign phrases that we come across in papers and books.

Ab ante—From before: Latin.
A bas—Down, or down with: French.
Ab initio—From the beginning; frequently written ab init.: Latin.
Ab intra—From within: Latin.
A bon marché—Cheap: French.
Absit—Let him be absent: Latin.
Ad avisandum—Literally, to be considered; used principally in Scotland to indicate that judgment in a trial is reserved: Latin.
A demi—By halves: French.
Ad finem—To the end; usually written ad fin.: Latin.
Ad hoc—For this (end): Latin.
Ad hunc locum—At this place; usually written ad h. l.: Latin.
A die—From that day: Latin.
Ad infinitum—To infinity; and so on forever; often written ad inf.: Latin.
Ad initium—At or to the beginning; often written ad init.: Latin.
Ad interim—In the meantime; often written ad int.: Latin.
Ad libitum—At pleasure; usually written ad lib.: Latin.
Ad locum—At the place; frequently written ad loc.: Latin.
Ad manum—At hand; ready: Latin.
Ad nauseam—To the point of loathing: Latin.
Ad referendum—To be further considered: Latin.
A droite—To the right: French.
Adsum—I am here: Latin.
Ad valorem—According to value; frequently written ad val.: Latin.
Affaire d'amour—A love affair: French.
Affaire de cœur—An affair of the heart: French.
Affaire d'honneur—An affair of honor; frequently used of a duel: French.
A gauche—To the left: French.
Aîné, aînée—Senior: French.
A la carte—According to the bill of fare: French.
A la mode—In the fashion: French.
A la mort—To the death: French.
A l'anglaise—In English style: French.
Al fresco—In the open air: Italian.
Alma mater—Literally, kind mother; applied to the university that a student has attended: Latin.
A l'outrance—A frequently-made error for à outrance: French.

Alter ego—Literally, other self; used sometimes for a bosom friend and sometimes for someone else with a close resemblance: Latin.

Alter idem—Another of the same: Latin.

Altesse—Highness: French.

A majori ad minus—From the greater to the less; sometimes the last two words are omitted: Latin.

A merveille—Wonderfully: French.

A minori ad majus—From the less to the greater; the last two words are frequently omitted: Latin.

A mon avis—In my opinion: French.

Amor vincit omnia—Love conquers all things: Latin.

Amour propre—Self-esteem; French.

Ancien régime—The old order of things: French.

Anno domini—In the year of our Lord; usually written A.D.: Latin.

Anno mundi—In the year of the world; usually written A. M.: Latin.

Annus mirabilis—Year of wonders: Latin.

Ante bellum—Before the war: Latin.

Ante Christum—Before Christ; frequently written A. C., but B. C., is more common: Latin.

Ante meridiem—Before noon: Latin.

A outrance—To the bitter end: French.

Apologia—Apology: Greek.

A posteriori—From effect to cause: Latin.

Appartement—A suite of rooms; a flat: French.

A priori—From cause to effect: Latin.

Aqua fortis—Strong water; the name given to nitric acid, which dissolves nearly all metals except gold and a few other precious metals: Latin.

Aqua regia—Literally, royal water, applied to a mixture of nitric and hydrochloric acids, which dissolve gold when mixed, but do not do so singly: Latin.

Aqua vitæ—Water of life: Latin.

Ars longa, vita brevis—Art is long, life is short: Latin.

A toute force—By all means: French.

A tout prix—At any price: French.

A travers—Across: French.

Au contraire—On the contrary: French.

Au courant—Fully informed: French.

Au fait—Well acquainted: French.

Au fond—To the bottom: French.

Auf Wiedersehen—Till we meet again: German.

Au plaisir de vous revoir—Till I have the pleasure of seeing you again: French.

Au revoir—Until we meet again: French.

Autres temps, autres mœurs—Other times, other manners: French.

Aux armes—To arms: French.

Avant-coureur—Forerunner: French.

Ave, Cæsar, morituri te salutant—Hail Cæsar, those about to die salute thee; the greeting of the gladiators: Latin.

Ballon d'essai—A trial balloon; a "feeler": French.

Belles-lettres—Literally, fine letters; elegant literature, poetry, fiction, and criticism: French.

Belle vue—Fine view or prospect: French.

Bête noire—Black beast; pet aversion: French.

Bien—Well: French.

Bien-aimé—Well-beloved: French.

Bis—Twice; again: French.

Bona fide—In good faith: Latin.

Bona fides—Good faith: Latin.

Bonhomie—Good nature: French.

Bon jour—Good morning: French.

Bon marché—Cheap, a good bargain: French.

Bonne foi—Good faith: French.

Bon soir—Good evening: French.

Bon ton—The height of fashion: French.

Bon vivant—Good liver; jolly fellow: French.

Bon voyage—A pleasant journey: French.

Bourse—Stock Exchange: French.

Café au lait—Coffee with milk: French.

Café noir—Black coffee; coffee without milk: French.

Cap-à-pie—From head to foot: Old French.

Carte blanche—Literally, a white card; full powers to act: French.

Casus belli—Reason for war: Latin.

Cause célèbre—Famous trial: French.

Cave canem—Beware of the dog: Latin.

Centum—A hundred; generally written cent: Latin.

C'est-à-dire—That is to say: French.

C'est magnifique, mais ce n'est pas la guerre—It is magnificent, but it is not war; historic saying of a French General who witnessed the charge of the Light Brigade at Balaclava: French.

Chemin de fer—Railway: French.

Cherchez la femme—Look for the woman; there is a woman at the bottom of it: French.

Chic—Stylish: French.

Cogito, ergo—sum—I think, therefore I am; the famous proposition of the French philosopher Descartes: Latin.

Coiffeur—Hairdresser: French.

Comme il faut—As it ought to be; gentlemanly or ladylike: French.

Compos mentis—Of sound mind; sane: Latin.

Concours—Competition: French.

Contretemps—An inopportune happening; a hitch: French.

Corps diplomatique—Diplomatic body: French.

Coup d'état—An unexpected stroke of policy: French.

Coup de grâce—Finishing stroke: French.

Crême de la crême—Cream of the cream: French.

Cul-de-sac—Literally, bottom of the sack; a street open only at one end: French.

Cum grano salis—With a grain of salt; with some allowance for exaggeration: Latin.

De die in diem—From day to day: Latin.

De facto—From the fact; actual: Latin.

Dei gratia—By the grace of God; frequently written D. G.: Latin.

Déjeuner—Lunch: French.

De novo—Anew: Latin.

Deo gratias—Thanks to God: Latin.

De profundis—Out of the depths: Latin.

De rigueur—Indispensable: French.

De trop—Too much or too many; intrusive: French.

Deus ex machina—Literally, a god from the machine; an apparent forced method or device in a plot: Latin.

Deus vult—God wills it; the battle cry of the Crusaders: Latin.
Dies iræ—The day of wrath: the Judgment Day: Latin.
Dieu défend le droit—God defends the right: French.
Dieu et mon droit—God and my right; the motto on the Royal arms of the British Sovereign: French.
Dit—Called, said: French.
Dolce far niente—Sweet do-nothing: Italian.
Domine, dirige nos — Lord, guide us; the motto of London, England: Latin.
Donnerwetter — Thunderstorms; used as an ejaculation, as, for instance, "Great Scott," in English: German.
Double entente — Double meaning: French.
Dramatis personæ—Characters in a play· Latin.
Dulce "domum" — Sweet "homewards"; from a Winchester (England) school song: Latin.
Dum spiro, spero—While I breathe, I hope: Latin.
Eau sucrèe—Sugared water: French.
Ecce homo—Behold the man! The expression used by Pilate when Christ appeared before the mob; also the title of a book by Sir J. R. Seeley, and of famous paintings by Correggio and by Guido Reni: Latin.
Edition de luxe—A luxurious and expensive edition of a book: French.
Eisen und Blut—Bismarck's famous phrase, meaning iron and blood: German.
El dorado — Golden land: Spanish.
Embonpoint—Stout or stoutness; literally, in good form: French.
Emeritus—Retired; generally applied to a professor: Latin.
En attendant—In the meantime: French.
En avant—Forward: French.
En dishabillé—In undress: French.
En évidence — Conspicuous: French.
En famille—In the family circle: French.
Enfant terrible—Literally, terrible child; used of a child who says indiscreet things that annoy or confuse his elders: French.
En fête—On holiday: French.
En masse—In a body: French.
En passant — In passing: French.
En route—On the road: French.
En suite—In succession; frequently misused by being made to mean "to match": French.
Entente cordiale—Good international understanding; particularly applied to British and French national friendship: French.
Entourage — Surroundings; followers: French.
En tout cas—In any case: also a sunshade: French.
Entre nous — Between ourselves: French.
Entrez—Come in: French.
Errare est humanum—To err is human: Latin.
Et alia—And other things; generally written et al.: Latin.
Et alii—And other persons; generally written et al.: Latin.
Et cetera—And so on; and other things; usually written, etc.: Latin.
Et tu, Brute—And you, Brutus; Cæsar's exclamation when he saw his friend Brutus among his assassins: Latin.
Eureka—I have found it: discovered at last: Greek.
Ewigkeit—Eternity: German.
Ex cathedra—Literally, from the chair; judicially or officially: Latin.
Excelsior—Higher: Latin.
Exempli gratia—For example; frequently written e.g.: Latin
Exeunt omnes—All go out: Latin.
Ex libris—From the books; usually followed by the name of a person in the possessive case: Latin.
Ex nihilo nihil fit—From nothing comes nothing: Latin.
Ex officio—Officially: Latin.
Ex parte—On one side; biassed: Latin.
Extra muros — Beyond the walls: Latin.
Facile princeps—Easily first: Latin.
Facta non verba—Deeds, not words: Latin.
Factum est—It is done: Latin.
Fait accompli — An accomplished fact: French.
Far niente—Doing nothing: Italian.
Faux pas—A false step or mistake: French.
Felo de se—Suicide: Latin.
Femme de chambre—Lady's maid: French.
Fidei defensor—Defender of the Faith: Latin.
Foie gras—Fat liver; fat goose livers are made into paté de foie gras: French.
Fortiter, fideliter, feliciter—Firmly, faithfully, felicitously: Latin.
Fortiter in re, suaviter in modo—Forcibly in deed, gently in manner: Latin.
Fra—Brother; the title of a friar: Italian.
Front à front—Face to face: French.
Gamin—Street urchin; ragamuffin: French.
Garçon—Boy; waiter: French.
Gardez—Take care: French.
Gloria in excelsis—Glory to God in the highest: Latin.
Gloria Patri—Glory be to the Father: Latin.
Grace à Dieu — Thanks to God: French.
Hic est—This is; generally written h. e.: Latin.
Hic et ubique—Here and everywhere: Latin.
Hic jacet — Here lies; frequently written H.J.: Latin.
Hic requiescat in pace—Here rests in peace; frequently written H.R.I.P.: Latin.
Hier spricht man Deutsch—German spoken here: German.
Hoc anno—In this year: Latin.
Hoc est—That is; generally written h.e.: Latin.
Hoch—Your health, in proposing a toast: German.
Hominis est errare—To err is the lot of man: Latin.
Homme d'affaires—Man of business: French.
Homme de lettres—Man of letters: French.
Homme d'esprit—Man of wit: French.
Homme du monde—Man of fashion: French.
Honi soit qui mal y pense—Shame be to him who thinks ill of it—the motto of the Order of the Garter: French.
Horribile dictu—Horrible to relate: Latin.
Hors de combat—Out of the fight; disabled: French.
Hôtel de ville—Town or city hall: French.
Hôtel Dieu—God's house; hospital: French.
Humanum est errare—To err is human: Latin.
Ibidem—In the same place, or in the same case: Latin.
Ich dien—I serve; the motto of thePrince of Wales: German.
Ici on parle francais—French spoken here: French.
Idem—The same: Latin.
Idem quod—The same as; frequently written i.q.: Latin.
Id est—That is; generally written i.e.: Latin.

Impasse—An insuperable obstacle; a sticking point: French.
Impedimenta—Luggage; army baggage: Latin.
Imperium in imperio—A state within a state: Latin.
In articulo mortis—At the point of death: Latin.
In camera—In private: Latin.
Incognito—Privately; under an assumed name; generally written incog.: Italian.
In Dei nomine—In the name of God; frequently written I.D.N.: Latin.
Index expurgatorius—List of forbidden books: Latin.
In Domino—In the Lord: Latin.
In extremis—At the point of death: Latin.
In forma pauperis — As a pauper: Latin.
Infra—Below; often written inf.: Latin.
In loco parentis—In the place of a parent: Latin.
In memoriam—In memory: Latin.
In pace—In peace: Latin.
In posse—Within the range of possibility: Latin.
In propria persona—In person: Latin.
In re—In the matter of; concerning: Latin.
In situ—In its original place: Latin.
In statu quo—In the former state: Latin.
Inter alia — Among other things: Latin.
Inter alios —Among other persons: Latin.
Inter nos—Between ourselves: Latin.
Inter se—Among themselves: Latin.
In toto—Entirely: Latin.
Ipse dixit—His mere statement; literally, he himself said it: Latin.
Ipsissima verba—The very words: Latin.
Ipso facto—Virtually: Latin.
Jeu de mots—A pun; literally, a play on words: French.
Jeu d'esprit — A witticism: French.
Labore et honore—By labor and honor: Latin.
Lapsus linguæ—Slip of the tongue: Latin.
Lares et penates—Household gods; used of household effects, such as furniture: Latin.
Laus Deo—Praise to God: Latin.
Le beau monde—The world of fashion: French.
Le grand monarque—The great monarch, Louis XIV.: French.
Le roi le veult—The king wills it; the words in which the King of Great Britain gives his assent to a Law passed by Parliament: Norman French.
Lèse majesté—Literally, injured majesty; an offence of disrespect constituting a mild form of treason: French.
L'état, c'est moi—I am the state; a saying of Louis XIV.: French.
Liberté, égalité, fraternité—Liberty, equality, fraternity; the motto of the French Republic: French.
Locum tenens—Literally, holding the place; a temporary substitute: Latin.
Locus standi—Standing place; right to interfere: Latin.
Loquitur—Speaks; frequently written loq.; Latin.
Ma chère—My dear: French.
Ma foi—My faith: French.
Magnum bonum — A great good: Latin.
Magnum opus—A great work: Latin.
Mal à propos—Unsuitable: out of place: French.
Mal de mer — Sea-sickness: French.
Mandamus—Literally, we command; used to indicate an order made by a higher court to a lower: Latin.
Materfamilias—The mother of a family: Latin.
Materia medica—The science that studies the remedies used in medicine: Latin.
Memorabilia—Things to be remembered: Latin.
Mens sana in corpore sano—A sound mind in a sound body: Latin.
Mésalliance — A marriage between two people of different social positions: French.
Meum et tuum—Mine and thine: Latin.
Mirabile dictu—Wonderful to tell: Latin.
Mirabilia—Wonderful things: Latin.
Mise en scène—Stage get-up: French.
Modus—Manner: Latin.
Modus operandi—Mode of operation: Latin.
Modus vivendi—Literally, a way of living; a settlement or compromise between opposite parties in a dispute: Latin.
Mon ami—My friend: French.
Mon cher—My dear: French.
Multum in parvo—Much in little: Latin.
Née—Born; the expression "Mrs. Smith née Jones" indicates that Jones was Mrs. Smith's name before marriage: French.
Nemine contradicente—With no one opposing; often written nem. con.: Latin.
Ne plus ultra—Nothing further: Latin.
Nil desperandum—Never despair: Latin.
Noblesse oblige — Rank has obligations: French.
Nolens volens—Willing or unwilling: Latin.
Nom de guerre—Literally, war name; assumed name: French.
Nom de plume—Literally, pen name; name assumed by a writer. The words are French, but the expression is not good French idiom: French.
Non compos mentis—Not of sound mind: Latin.
Non sequitur—A wrong conclusion: Latin.
Nota bene—Note well; usually written N.B.: Latin.
Notre Dame—Our Lady; the Virgin Mary: French.
Nouveaux riches—Newly rich; upstarts: French.
Nulli secundus — Second to none: Latin.
Obiit—He, or she, died: Latin.
Obiter—By the way: Latin.
Obiter dictum—A cursory remark (plural, *dicta*): Latin.
Octroi—Duties collected at the gates of a city or town: French.
Œil de bœuf—A bull's eye; a small circular window: French.
Œuvres—Works: French.
Omnia vincit amor—Love conquers all: Latin.
On dit—They say; a flying rumor: French.
Ora et labora—Pray and work: Latin.
Ora pro nobis—Pray for us: Latin.
O tempora! O mores—Literally, Oh, times! Oh, manners! What sad times! What awful doings: Latin.
Pace tua—By your leave: Latin.
Par excellence—By excellence; superb: French.
Par exemple—For example: French.
Pari passu—Literally, with equal pace; together: Latin.
Parvenu—Literally, arrived; an upstart: French.

Paterfamilias — Father of a family: Latin.
Pater patriæ—Father of his country: Latin.
Per annum—By the year; frequently written per an.: Latin.
Per centum—By the hundred; also written per cent., p.c., or %: Latin.
Pièce de résistance—Literally, piece of or for resistance; the chief course at a dinner: French.
Pied - à - terre — Temporary lodging: French.
Pinxit—Painted: Latin.
Pis aller—Literally, worst go; a makeshift: French.
Pleno jure—With full powers: Latin.
Pons asinorum—Literally, the bridge of asses; usually applied to Euclid I. v.: Latin.
Poste restante—A department in a post-office where letters lie till called for by the person to whom they are addressed: French.
Post mortem—After death: Latin.
Post obitum—After death: Latin.
Postscriptum—Written after; generally written P.S.: Latin.
Pot pourri—A mixture of dried flowers: French.
Pour prendre congé or p.p.c.—To take leave: French.
Presto—Quick: Italian.
Prima facie—On the first view: Latin.
Primo—In the first place: Latin.
Pro and Con—For and against: Latin.
Pro forma—As a matter of form: Latin.
Pro patria—For our country: Latin.
Pro rata — In proportion: Latin.
Prosit—Your health, in drinking a toast: German.
Pro tempore—For the time; frequently written pro. tem.: Latin.
Proximo—Next; generally written prox.: Latin.
Quid pro quo—Literally, what for what; value for value, or value in return: Latin.
Qui s'excuse, s'accuse—He who excuses himself accuses himself: French.
Quod erat demonstrandum—Which was to be proved: Latin.
Quod erat faciendum—Which was to be done: Latin.
Quod vide—Which see; generally written q.v.: Latin.
Quo vadis — Whither goest thou: Latin.
Raison d'être — Reason for being: French.
Rara avis—A rare bird; a curiosity: Latin
Reductio ad absurdum—Proof by proving the ridiculousness of the contrary: Latin.
Répondez, s'il vous plaît—Reply, if you please: French.
Requiescat in pace—May he rest in peace: Latin.
Ruse de guerre—Stratagem: French.
Rus in urbe—Country in the city: Latin.
Sancta simplicitas—Child-like simplicity: Latin.
Sanctum sanctorum — Holy of holies: Latin.
Sang froid — Literally, cold blood; indifference: French.
Sans cérémonie—Without ceremony; informal: French.
Sans culottes—Breechless; a name given to some agitators at the beginning of the French Revolution: French.
Sans peur et sans reproche—Without fear and without reproach; the phrase used to describe the Chevalier Bayard (about whom we have read): French.
Sartor resartus—The tailor reclothed; the name of a book by Carlyle: Latin.
Savoir-faire—Tact: French.
Semper eadem, or semper idem —Always the same: Latin.
Sequentes, or sequentia—The following; generally written seq.: Latin.
Seriatim—One after another: Latin.
Sic transit gloria mundi—Thus passes worldly glory: Latin.
Sine die—Without day, indefinitely; frequently written s.d.: Latin.
Sine qua non—Without which not; an essential: Latin.
Soi-disant — Self-styled; pretended: French.
Status quo, or status quo ante —The existing or former condition: Latin.
Sturm und Drang—Storm and stress: German.
Suaviter in modo, fortiter in re—Gentle in manner, strong in action: Latin.
Sub judice—Under consideration, or in course of trial: Latin.
Sub pœna—Under a penalty: Latin.
Sub rosa—Under the rose; privately: Latin.
Sub voce—Under the word; as, for example, under the word in a dictionary or encyclopædia: Latin.
Sui generis—Of its own species; peculiar: Latin.
Summum bonum—The highest good: Latin.
Supra—Above: Latin.
Tableau vivant—Living picture: French.
Tempus fugit—Time flies: Latin:
Terra incognita—An unknown country: Latin.
Tête-à-tête—Literally, head to head; a private conversation between two: French.
Tour de force — A feat: French.
Tu quoque, Brute—And thou, too, Brutus; the same as et tu, Brute: Latin.
Ultima thule—The farthest boundary: Latin.
Ultimo—Last; usually written ult.: Latin.
Ultra vires — Beyond one's power: Latin.
Vade mecum—Go with me; a constant companion: Latin.
Veni, vidi, vici—I came, I saw, I conquered; Cæsar's famous saying: Latin.
Verbum sapienti sat est—A word to the wise man is sufficient; often contracted to verb. sap.: Latin.
Versus—Against; often written v.: Latin.
Via—By way of: Latin.
Via media—A middle course: Latin.
Vice—In place of: Latin.
Vice versa—Transposed: Latin.
Videlicet—Namely; usually written viz.: Latin.
Virginibus puerisque — For girls and boys; the name of one of Stevenson's books: Latin.
Vis-à-vis — Face to face: French.
Vita brevis, ars longa—Life is short, art is long: Latin.
Viva voce—By oral testimony: Latin.
Vive la république—Long live the republic: French.
Vive l'empereur—Long live the emperor: French.
Voilá—There is: French.
Volente Deo — God willing: Latin.
Volo, non valeo—I am willing, but unable: Latin.
Vox populi, vox Dei—The voice of the people is the voice of God: Latin.

THE BOOK OF SCHOOL LESSONS IS NOW ENDED.

WHY A KITE KEEPS UP IN THE AIR



The air above the earth is in layers of different densities, and these are constantly moving in a horizontal direction. The string of a kite is so placed that the air can beat against the face of the kite and preserve it at an angle that allows the bulk of the air current to glide downwards. But this air, meeting the dense air below, is pressed up against the kite, which, when it is pushed, moves where there is least resistance—namely, upward through the thinner air. And so the process is constantly repeated. If, however, the string is fixed in the wrong position, or is entangled, the kite is not maintained in its proper position, and it falls.



HOW HIGH CAN MEN FLY?

CONTINUED FROM 5816

WHEN aeroplanes were first made, it was thought that a flying machine which carried a man could fly only very near the ground. For one thing it was thought safer to do so. For another it might be expected that near the ground the changes in wind would be less, and as even very young people can remember, in the early days an aviator did not dare to go into the air if the wind blew. Another important reason was that the air is denser near the ground, and therefore less power is needed to keep the aeroplane up in a low flight than in the rarer air higher up. However, as aeroplanes were improved, and engineers learned to make engines that are at the same time light and powerful, aviators become more daring. Battle planes carrying two men and two guns fly six or seven thousand feet from the ground. Lighter machines have gone up to the astonishing height of nearly twenty-five thousand feet. A change of wind does not drive an aviator down from the upper air, and a wind storm does not prevent him from going up. It has been found too that though the air is rarer in high regions, the currents are much smoother than they are lower down.

IS A BOX IN WHICH A CANDLE HAS BURNT LIGHTER THAN A BOX AND CANDLE?

When we burn the candle in the ordinary way it seems as if something had been turned into nothing, because the matter of the candle disappears and there is nothing to show for it. If it were true that the candle turned into nothing when it was burned, we should be in the presence of an utter mystery without any meaning. But it is just such an experiment as this that gives us the key to what really happens when a candle burns, that explains to us why it disappears, and, what is much more important, teaches us that we are utterly wrong in supposing that when the candle disappears the matter which made it is destroyed.

When we weigh the box, to begin with, we have to reckon with the box, the candle, and the air in the box; but when we weigh it a second time, the box remains the same, but the candle inside has vanished. Yet the weight is the same, and this means that the air or mixture of gases inside the box is heavier, and heavier by the weight of the candle; no more and no less. The substance of the candle has combined with the gases of the air to form new gases. Nothing is lost, nothing is gained, and though there has been chemical change, we know that that does not affect gravitation, upon which weight depends.

WHY DOES A STICK SEEM TO BEND WHEN PUT INTO A POND?

We see a stick, as we see anything else, by the rays of light which come from it. These rays are governed by certain laws by which they travel. If

they possibly can, they travel in straight lines. And so, if the stick is straight and we see it from end to end through one and the same thing, as when it is held in still air or in still water, the stick appears to be straight. If the air or the water be moving, we may not see the stick straight; but we shall never see it straight if we put it half in the water.

We can see this for ourselves with a stick in a pond, or with a pencil, which is a kind of stick, in a tumbler of water, which is a kind of pond, or in many other cases. The bend that we notice always occurs at the surface of the water. We see it best if we raise the tumbler and look at it sideways. We then see half the stick through air and half through water. At least, that is what we might be inclined to say, but it is not quite the whole truth. We see the upper half of the stick through the air all the way, and there is nothing more to say about that; but if we think, we shall understand that the light from the lower half of the stick is traveling to our eyes first through water and then through air.

Now, the rule is that whenever light passes from one thing to another, as from water to air, or air to water, it is bent; and so, though the part of the stick under the water appears straight enough when the water is still, it is bent at an angle at the part above the water. This sharp bending of the rays of light in such cases is called refraction, which really means breaking.

How was it discovered that the sun is larger than the earth?

There are many distinct ways which all help to teach us the size of such a body as the sun. Of course, when we use such a word as "larger," it ought to refer strictly to size, but we might also be thinking of the amount of stuff or matter in the sun; in other words, there is the question of volume and there is the question of mass, and the study of each helps the study of the other.

We can learn the size or volume of the sun by measuring the distance across its face. The mere measurement of the disc as it appears to us, however, would not, in itself, tell us any real fact: it would only convey the idea that the sun is about as large as the moon. But if we know the distance of the sun from us, we can work out its size from its distance and the size of its face as it appears to us.

We can study the mass of the sun by applying our knowledge of the law of gravitation. Gravitation does not in the least concern itself with mere volume or size, but it concerns itself altogether with mass. When we know the law of gravitation, it will teach us the mass of any heavenly body of which the attractive power can be measured, because we know that that attractive power depends exactly upon the mass of the body in question, other things being equal. In this way the mass of the sun can be learned, and even the mass of dark stars, far away in space, of which we are able to know the existence only because the movements of other stars are seen to be disturbed by their gravitation.

Why do some notes in music agree and others make a discord?

It is now possible to count in each second the number of waves that make a musical note. When we study in this way the notes of a chord of two or more notes that agree and are harmonious, we find that the proportions between the numbers of waves in a second are always very simple. The chord that satisfies the ear best is made of notes that have, for instance, 400, 500, 600 and 800 waves in a second. It does not matter what the actual figures are at all, so long as the proportion between them is that between 4, 5, 6 and 8.

But a chord which we dislike and call a discord is made of notes that have, perhaps, these numbers of waves in a second—400, 477, 701, 835, or any other numbers that do not have a simple proportion to each other. Thus not very many harmonies are possible, but the possible number of discords is infinite. But discords are very useful in music, for they add enormously to the value of the harmonies and to our pleasure in them when they come.

Do the wicked nearly always triumph in the world?

All sorts of things have been said on this subject. For instance, it is said that "Honesty is the best policy," as if to mean that it is the best policy for this world, and that the honest man will always triumph over the knave. On the other hand, many men in certain kinds of business declare that it is quite impossible to make a living if one is honest.

They teach, indeed, that honesty is the worst policy in ordinary life. Ages ago the author of one of the Psalms declared that, though he was old, he had never seen the righteous forsaken, nor his children begging bread. In the modern world we see this every day, just as we also see righteousness prospering. And we see one dishonest man, perhaps, the richest man in the world, and another going to penal servitude for his dishonesty.

There is no rule. So many things, of such various kinds, make for triumph in this world that being good or bad may seem to work either way in turn. But goodness is worth while, because triumph in this world is worth nothing in itself, and goodness is worth everything in itself. So, in a higher and deeper sense of the word, honesty is the best policy.

AS PART OF THE WORLD FACES DOWN, WHY DOES NOT THE SEA FALL OUT?

This is a very natural question to ask until we remember what our earth is. It is a ball in space, with infinite distances on all sides of it. In these distances there are real directions, of course —there is north, toward which the North Pole of the earth points, and south, east, and west. These terms have real meanings, but so far as the great universe is concerned, up and down have no meanings at all. From our point of view, New Zealand is facing down, and it is always facing down, even though at 12 o'clock noon and 12 o'clock midnight we and it have changed places; and, from the point of view of New Zealand, we are always facing down. Each of us is just thinking of his relation to the earth, and our words have meaning simply and solely in relation to the centre of the earth.

Now, the centre of the earth is always down from New Zealand or from us at any time of day or night; and every part of the world faces up, for its face is turned away from the centre of the earth. The power of gravitation acts toward the centre of the earth, pulling everything down toward it. If we jump here the earth pulls us back; if a New Zealander jumps at the same time almost in the opposite direction, the earth pulls him back too.

When we think it out like this we can understand why the sea does not fall out at any part of the earth's surface, and why there is no more reason for it to do so at any one point than at any other.

WHY DOES WATER SPLASH WHEN IT DROPS TO THE GROUND?

In order to answer this question we must first know why water forms drops at all. The answer is that there is a force called cohesion—or sticking together—which acts between the little molecules of the water, and holds them together in the round form that makes a drop. Now, when the drop falls upon the ground it is broken up, and this can only mean that something has overcome the force of cohesion between the drops, and has pulled them apart with a greater force than that which held them together.

This force is to be found in the motion of the drop as it fell. When the motion of the drop is arrested, it cannot be lost or destroyed; it must turn into something. If the water had sufficient cohesion, and were elastic, the motion would be turned into motion in the opposite direction—the drop would bounce. But, instead of that, the force of the drop's motion is turned into the force that overcomes its cohesion and drives its different parts asunder.

WHAT MAKES THE WATER DRY UP IN HOT WEATHER?

Whenever water or anything else disappears we know that it has not been made into nothing or destroyed, but has gone somewhere. In this case it is very easy to say where the water has gone. It has gone into the air; and exactly as the plate or the ground or whatever the water left is drier, so the air is wetter.

Our question then is, why does the water go into the air, and why especially in hot weather? Whenever water is exposed to an atmosphere that does not already contain as much water as it can hold, the water passes into the air in the form of water-vapor. We say that it evaporates. And the hotter the air is the more water will it hold, though so long as the air does not contain as much water as it can hold, water will evaporate at all temperatures.

Now, if anything happens to lower the temperature of the air when it is as full, or nearly as full, of water-vapor as it can be, the reverse of what happened before takes place, and the water comes out of the air, perhaps as dew, or as rain. And now we see why this may happen in hot as well as cold weather—that is, why it may rain in summer, as we all have opportunities of noticing every year.

WHY DOES AN EAR OF CORN HAVE A SILK TASSEL?

Let us go out into the field and pick a ripe ear of corn and examine all its different parts. We know that nothing that nature has made is useless, although we may not always be able to find out just what its use is. Let us see if we can tell what the silk tassel at the top of the corn plant was made for. You will notice that the ears of corn spring out of the side of the stalk, and that they are covered with husks to protect the kernels or seeds, and that a bunch of soft, silk threads hangs out of the end of the ear. At the top of the plant is the tassel, which is really the flower of the corn and which contains the pollen. The grains of corn on the ear are the seeds of this wonderful plant, and for every one of these silk threads at the end of the cob, there is a grain of corn. Now every seed or grain of corn must receive some of the pollen from the silk tassel at the top of the plant before it will grow. Can you guess how the pollen gets to the seed? It is the wind which does this important work. The wind shakes the tassel and blows the pollen on to the sticky silk threads beneath. Then in some wonderful way Nature carries the pollen to the seed or kernel of corn, and tells it that it is time to grow and develop into the large, juicy kernels which we all enjoy so much, and wait for with such impatience.

WHAT IS A TOTEM POLE?

When we wish to talk about some person or some thing, it would be necessary to point to it or show it if we did not have a name for the person or thing. As explained on page 688, we have names for convenience more than for any other reason, but there was a time in the long ago, when people lived together in tribes, or clans, and the members of these great families did not have any name, but the whole family, or tribe, had a name or sign, and these people talked about themselves by means of their family sign. The North American Indian word "totem" means "family token," and each family set up a pole outside of the entrance to its home, called the "Totem Pole" or "Sign Pole." Usually a certain animal was painted or carved upon the pole, such as the bear, the turtle, the crane or the beaver, and this same figure was often painted on the body or shown on the garments. An individual belonging to the tribe of the Bear might be called "Growling Bear" or "Fighting Bear" to distinguish him from others of the same tribe.

WHY IS THERE LITTLE RAIN IN PERU AND NORTHERN CHILE?

You remember that in another part of the book we have told you about the trade winds, which were of so much importance to navigation in the old days of sailing vessels. These winds, as we know, are really currents of air rushing up toward the equator from the cold regions of the poles. The trade wind in the southern hemisphere is a southeasterly wind; that is, it blows from the southeast into the northwest. As it blows over the Atlantic Ocean, it gathers up a great deal of moisture, which falls in rain on the highlands of Brazil and in rain and snow on the eastern sides of the Andes, thus providing the water that fills the great rivers of the east. Of course you know that when a wind becomes cold the water vapor which it carries condenses and falls in rain or snow. But when our trade wind has reached the western slopes of the Andes it has no more moisture to give. It has lost all as it crossed the snow-laden peaks and has none left to give to the western mountain slopes, or the parched coastal plain. You remember, however, that a westerly wind blows off the Pacific, which gives plenty of rain to the coast of North America, and you wonder why this wind does not give moisture to the southern coast. It does in the south of Chile and in parts of Colombia and Ecuador, and it would do the same thing for the coast of northern Chile and Peru if it were not for the Humboldt current.

You know there are currents in the ocean as well as in the air. One of these —the Humboldt current—flows up from the cold Antarctic Ocean along the coast until it strikes the shoulder of the continent, and is swept out into the Pacific. This cold current chills the wind so that it cannot hold much moisture. But when the chill wind blows across the coast, it becomes a hot wind. The temperature of the air rises so that it is able to retain its moisture in the form of gas, and there is no rain.

THE NEXT QUESTIONS ARE ON PAGE 5887.